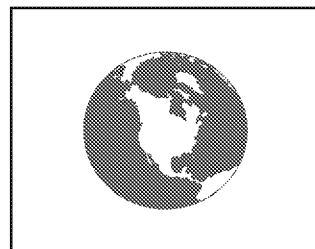


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CAR LINES

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EUROPE

1. Parliament Environment Committee Demands Binding 2025 Air Quality Targets

Member states should meet stricter 2030 targets than proposed by the European Commission, the European Parliament's environment committee said. Mercury should also be covered by the National Emission Ceilings (NEC) Directive, they added.

Intermediate binding targets for 2025 would be set for all the pollutants except methane, according to the committee's position on the revision of the directive. It passed by a vote of 38 to 28, with center-right MEPs opposed.

Many member states oppose binding targets in 2025 and the extension of the directive to cover methane. They have also raised concerns about the feasibility of the target for ammonia. Farmers have said restricting these two pollutants would cause economic hardship, and the governments of France and the UK are leading the push to leave them out of the legislation.

The Commission proposed in December 2013 new 2020 and 2030 targets for SO₂, NO_x, ammonia, methane, PM_{2.5} and volatile organic compounds emissions, but it kept 2025 targets non-binding. Its proposal set an overall 33% emission reduction target for 2030 relative to 2005 levels.

The vote was welcomed by health and environment NGOs. HEAL said the cuts proposed by the Parliament would cut healthcare costs and improve worker productivity.

MEP Julie Girling of right-wing ECR group, who leads work on the file, did not vote in favor of the final position, calling the targets adopted by the committee "unrealistic". "Therefore I fear that we are now embarking on a long and protracted negotiation, rather than taking the quicker route of improved health for EU citizens," she said.

2. Full Parliament Weakens Air Quality Ambition

The European Parliament has rejected its environment committee's push for more ambitious pollution limits than those tabled by the European Commission for the new National Emission Ceilings Directive. The Parliament voted in plenary to reinstate the 2030 emission limits for SO₂, NO_x, volatile organic compounds (VOCs) and ammonia proposed by the Commission in 2013.

But it confirmed the environment committee's July proposal that interim targets for 2025 should be made binding.

The Parliament also backed the Commission's proposal to include methane in the directive's scope for the first time, but with the proviso that enteric emissions from ruminant animals be excluded to protect the agriculture sector. Fears for the agriculture sector also caused MEPs to introduce an amendment that would require the Commission to review progress towards ammonia targets after 2020.

The Parliament also wants the Commission to perform an impact assessment on including mercury in the directive, a watering down of the environment committee's call for mercury to be included outright. "It's clear there was not a majority for having mercury in the proposal," said rapporteur Julie Girling of the right-wing ECR group.

Both Ms. Girling and environment commissioner Karmenu Vella urged MEPs not to adopt too ambitious targets because this would make it more difficult to reach an agreement with member states.

But Matthias Groote of the S&D group said 40,000 extra premature deaths each year could be prevented through backing the environment committee's rather than the Commission's level of ambition. He urged MEPs not to "throw in the towel" before negotiations with member states have even begun.

Environment campaigners said the plans are too conservative and the proposed limits for emissions are above safe levels agreed by the World Health Organization. "With the Volkswagen scandal fresh in their minds, MEPs had a major opportunity to right a wrong and take action to clean up Europe's air," said Louise Duprez, senior policy officer for air pollution at the European Environmental Bureau.

A number of MEPs argued that it was time for farming to take on its fair share of air pollution reduction effort. But others said that methane should not be regulated under both climate and air quality law, and methane targets would have an impact on animal welfare as more animals would have to be housed in sheds. Mr. Vella denied this was the case.

The exemption for ruminant animals was a last ditch compromise intended to keep methane in the Parliament's position. Alan Andrews of ClientEarth said the amendment was "a sop to the farming lobby" but meant that methane from waste and the oil and gas sectors could still be regulated.

Member states are due to adopt their position in December, after which the two sides will negotiate a compromise.

3. EU Delays Heavy-Duty Vehicle Emissions Measure

A European Union measure on carbon dioxide emissions from trucks and other heavy-duty vehicles, originally slated for publication in 2015, will not be proposed until 2016 or 2017, the European Commission recently confirmed. The commission, the EU's executive arm, originally said in May 2014 that it would propose legislation that would require heavy-duty vehicle manufacturers to monitor and report fuel efficiency and carbon dioxide emissions data during 2015, as a preliminary step ahead of possible carbon dioxide emission limits for vehicles such as trucks and buses. Unlike the U.S., which put in place a greenhouse gas emissions standard for heavy-duty vehicles in 2011, the EU has no harmonized measure for truck carbon dioxide emissions, though it has emissions limits that passenger cars and light vans must meet.

The commission said any measure to limit carbon dioxide emissions from heavy-duty vehicles would be considered only after "further analysis" once a monitoring and reporting system was put in place. Monitoring and reporting of truck and bus carbon dioxide emissions would be proposed in 2016 or 2017 and would "introduce more transparency to the market," the commission said.

On September 21st, environmental advocacy group Transport & Environment (T&E) published a briefing paper on heavy-duty vehicle emissions, which it said represent 30 percent of greenhouse gas emissions from transport in the EU and 5 percent of total EU emissions. Without measures to restrict their emissions, heavy-duty vehicles could emit 40 percent of EU carbon dioxide from transport by 2030, the T&E paper said.

Carlos Calvo Ambel, T&E policy analyst, told reporters that the introduction of carbon dioxide standards for heavy-duty vehicles in the U.S. showed that delays in the EU were “not an issue of technical feasibility but of regulators being captured by special interests.”

A future European Commission proposal on monitoring and reporting of truck emissions should be quickly followed up by a proposed standard setting an emissions limit, Ambel said.

Vehicle carbon dioxide emissions are currently under the spotlight in the EU following the exposure in the U.S. of the use by German manufacturer Volkswagen of hidden software in its diesel cars to rig tests for emissions.

4. MEPs Approve Weaker Machinery Pollution Rules

The European Parliament's environment committee voted 64–3 to grant temporary exemptions from more stringent emission limit values proposed by the European Commission last year to mobile cranes, engines for inland waterway vessels, heavy machines and machines manufactured by SMEs.

The new law aims to cut air pollution from agricultural and construction machinery, such as tractors, lawn mowers and bulldozers. These account for about 15% of all NOx and 5% of particulate emissions in the EU. The law sets limits on emissions of carbon monoxide, hydrocarbons, nitrogen oxides and particulate matter that non-road machinery must comply with in order to be placed on the EU market.

The committee told the Commission it should also look into the emissions test cycle to determine how closely the test results correspond to emissions in actual operation. The Commission is currently finalizing new testing procedures for car emissions that are aimed to reflect real-life driving conditions more closely.

MEPs also urged member states to take measures to encourage the retrofitting of existing engines with pollution reducing technology in densely populated urban areas or those areas which are breaking EU air quality rules. Green group T&E welcomed the retrofit addition by MEPs but criticized the additional exemptions as well as the MEPs' rejection of amendments that would have required similar retrofits for diesel train engines. Such measures were excluded from the proposal because the Commission expects most trains to be electrified by 2030, the group said. But even if all trains were electrified by that date, the 15 preceding years would still have an adverse effect on the environment and on people's health, it added. According to Julia Poliscanova, an air pollution officer with the group, the environment committee missed an opportunity to require the fitting of better exhaust systems to diesel trains. The systems are “available and routinely fitted to modern trucks,” and the lack of a requirement to fit them to trains undermined the “green” transport claims of railways, Poliscanova said.

The law would take the form of a regulation, or uniform EU law, and would replace a 1997 EU Directive on emissions from non-road mobile machinery (97/68/EC).

Following the environment committee vote, Italian center-right member Elisabetta Gardini, who is the European Parliament's lead lawmaker on the issue, will seek to agree on a final text with the EU Council, which represents governments of EU member states. Once a final text is agreed, it must be ratified by both institutions.

The different pollution limits for different classes of non-road mobile machinery would take effect from 2018 through into the early 2020s.

5. Amminex to Upgrade Hundreds of Copenhagen City Buses To Euro VI

The Danish government and the municipalities of Copenhagen and Frederiksberg have decided to upgrade more than 300 city buses to combat toxic NOX/NO2 and particle emissions. The buses will be upgraded from the current Euro III/IV/V/EEV emissions standards to meet the much stricter Euro VI.

Amminex, together with both local partners and UK-based Eminox, has been selected to perform the upgrade and will install complete Johnson Matthey SCRT® catalyst based emissions systems in which Amminex ASDS™ technology is the key enabler of optimal NOx reduction.

This will enable the buses to conform not only to the Euro VI standard, but also an additional expected future tightening of this standard that caters for real driving emissions (RDE).

Amminex ASDS™ technology unlocks the full potential of the SCR catalyst by storing and injecting gaseous ammonia (NH3) into the exhaust stream. This enables a highly efficient NOx reduction in all driving conditions without compromising the fuel efficiency and CO2 footprint of the vehicle. Moreover, it represents a distinct advantage in cold climates as well as low exhaust temperatures, which is typical for buses operating in urban environments.

6. MEPs Want Transport Measures in Climate Deal

MEPs have urged EU ministers to ensure that the new global climate agreement to be finalized in Paris requires emissions reduction targets for international aviation and shipping. The EU's negotiating position for the December summit must call on the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to "increase their climate ambition and adopt measures to limit and reduce their sectors' emissions", a joint letter by MEPs to ministers argued.

The letter, signed by MEPs representing seven out of eight political groups in the European Parliament's environment committee, said there is "no reasonable excuse" to continue exempting shipping and aviation from a global policy framework.

EU environment ministers are meeting to adopt the EU's position for the Paris climate conference.

EU flights have been included in the emissions trading scheme since 2012, but talks at the ICAO aimed at developing an international market-based mechanism have been slow to make progress. MEPs said the ICAO's target of having carbon neutral growth beyond 2020 "falls well short of what is needed".

To cut the shipping sector's climate impact, the EU adopted monitoring rules for CO2 emissions from shipping last year as a first step while negotiations for an international solution continue at the IMO. MEPs argued that there is "an abundance of low-cost mitigation options that would permit global shipping to grow while arresting the growth of its emissions".

Recently, the Parliament called for a 2030 EU CO2 reduction target for the shipping sector, in line with an overall 2050 target to cut emissions from bunker fuels.

7. Polluted Paris Mulls Dumping Diesel



People walk on the Champs Elysees during the "day without cars", in Paris, France, Sunday, Sept. 27, 2015.

Pretty but noisy Paris, its gracious Old World buildings blackened by exhaust fumes, is going car-less for a day. Paris Mayor Anne Hidalgo presided over Sunday's "day without cars," two months before the city hosts the global summit on climate change.

Paris Guidebooks rarely mention it, but Paris is one of the most polluted cities in the rich world. The Eiffel Tower is periodically shrouded in smog, and there's one key culprit: France's disproportionately heavy reliance on diesel fuel.

Critics are increasingly questioning the need for diesel vehicles, especially after last week's discovery that Volkswagen tricked drivers worldwide into thinking their diesel engines were much cleaner than they really are.

Paris' diesel-driven pollution problem is especially embarrassing for a city that's trying to be environmentally exemplary as it prepares to host crucial U.N. talks in two months on reducing emissions. City authorities banned all traffic from central Paris on Sunday and are trying to gradually forbid diesel altogether, as they try to clean up the capital's image.

But a nationwide crackdown on diesel remains taboo. And elsewhere in Europe — where the majority of new cars run on diesel engines versus just one-seventh worldwide — few are raising the alarm.

"We must stop lying to the French by inciting them to buy so-called environmentally friendly cars," Emmanuelle Cosse, head of France's green party Europe Ecologie-les Verts, said. "Clean diesel doesn't exist."

The European Automobile Manufacturers Association argues that new technologies and tighter regulations mean modern diesel engines are on par with gasoline counterparts. Regarding the VW revelations, the group says, "There is no evidence that this is an industry-wide issue."

Diesel engines emit about the same or lower levels of carbon dioxide, the gas that causes global warming, as gasoline-fueled engines. The problem with diesel comes down to public health: its engines emit much more nitrogen oxides than do gasoline engines. That pollution is linked to asthma, bronchitis and increased risk of heart problems, and the World Health Organization's France-based cancer agency says diesel fumes can cause lung cancer.

But European consumers prefer diesel cars because they get better mileage and they're cheaper to fuel and maintain. In France, that's because of decades-old tax breaks and regulations that stretch from the factory floor to the gas pump, and that the government is reluctant to lift despite growing evidence of health risks. Most trucks, public buses and municipal vehicles run on diesel, too.

Dismantling France's deep and complex dependence on diesel could cost jobs and money in an economy with little maneuvering room. Governments left and right have legislated in favor of diesel since the 1960s, and industry officials fear ending the tax breaks and subsidies would drive consumers away from French cars at a time when the country is struggling to stay globally competitive.

"It makes no sense to abandon diesel," said Julie Hamez of French consumer group 40 Million Drivers. "We need to concentrate on what can be done with better technology" to reduce its damage to health and the environment.

But the Volkswagen scandal has raised new questions about carmakers' efforts to make less-pollutant engines. Other carmakers have faced similar accusations — including France's own Renault, among seven companies fined by U.S. environmental authorities in 1998 for cheating on emissions tests.

The former head of France's national air pollution agency Airparif, Jean-Felix Bernard, said he hopes the Volkswagen revelations prompt tougher European pollution rules — and especially tougher enforcement. "We knew that air pollution has a very large cost for global public health," he said. "There can be a very large economic cost when big companies are having fun by rigging the figures."

8. Italy Extends Energy Efficiency Tax Incentives

The Italian government announced on September 17th that it will extend an array of tax incentives aimed at encouraging greater energy efficiency. The plan is being cast by the Ministry of Environment as part of a wider set of measures aimed at confronting climate change. It will allow companies to deduct up to 65 percent of the cost of energy efficiency investments from corporate taxes on profits. Individuals can deduct 65 percent of the cost from their income tax rates. Experts said the measure is important as part of a broad mosaic of measures aimed at increasing energy efficiency and reducing greenhouse gas emissions. "By itself, the impacts are probably limited," Carlo Carraro, director of climate impacts and policy division at the Euro-Mediterranean Center for Climate Change, told reporters. "But Italy has one of the best energy efficiency records in the European Union and it is because an array of measures are available to create the right set of incentives."

9. EU In No Hurry to Adopt Sulfur Emission Rules For Carriers in Med

There is no "medium-term" prospect of the European Union expanding sulfur emission regulations for container lines to the Mediterranean, a Port of Barcelona executive said recently. That poses a stumbling block for EU states looking to crack down on emissions in so-called Sulphur Emission Control Areas on intra-Europe lanes, which lag behind trade lanes worldwide in emission tests. But, for carriers, the lack of urgency in expanding regulation beyond the Baltic and North seas and the English Shipping Channel will allow them to avoid higher costs accrued through buying low-sulfur bunker fuel or using gas exhaust scrubbers.

While EU countries bordering the Mediterranean might, in principle, be in favor of forming an ECA, Jordi Vila, head of port operations and planning at the Port of Barcelona, said there is no guarantee that the countries of the African littoral would be ready to follow suit.

"The realization of a Med ECA is very difficult because the ECA designation has to be unanimous in the [International Maritime Organization] and will be very hard to achieve. So I would say that, at least in the medium term, the answer is no," he said at the LNG Bunkering Mediterranean Summit in Barcelona.

Under EU directive, carriers operating in the Baltic and North seas and English Channel can only use fuel with a maximum sulfur content of 0.1 percent. The cap, introduced in January, is only the most recent and stringent restriction on carriers. When the ECAs first went into effect in May 2005, carriers were permitted fuel with as much as 1.5 percent sulfur content. Then, between July 2010 and January 2015, that benchmark was lowered to 1.0 percent, before ultimately falling to today's 0.1. To meet these ever-rising standards, ships must either improve the quality or type of fuel used — by switching to low sulfur fuel such as marine gas oil or liquid natural gas — or install post combustion systems such as gas exhaust scrubbers to reduce emissions to acceptable levels.

In the discussion that followed Vila's remarks, conference delegates expressed hope that, because the IMO aims to introduce a global 0.5 percent sulfur limit in ship fuels by 2020, an ECA in the Med might be introduced as part of the global sulfur cap. According to at least one report, intra-European trade lanes have some of the highest emission levels when compared to their counterparts worldwide.

A report released by the Clean Cargo Working Group, an organization whose membership includes shippers and carriers, shows that while the lowest average carbon emissions by far were on the Asia-North Europe trade lane, at 37.9 grams, the highest emissions were recorded in the intra-Europe trades, at 84 grams.

Delegates at last week's summit discussed one possibility to address their concerns in the Mediterranean: some form of unilateral action by Mediterranean EU member states to create 'mini-ECAs' either in individual ports or along their entire coastline. A start on this has already been made in China. In early September, the Ministry of Transport announced a plan to cut sulfur oxide emissions from ships by 65 percent in the Pearl and Yangtze River Deltas and Bohai Sea by 2020.

10. MEPs Call for New Diesel Test By 2017

The European Parliament's environment committee has voted to strengthen planned new diesel car emission test rules, voting in favor of implementation by 2017. The European Commission had proposed an "indeterminate period of time" for the introduction of the new real world driving (RDE) test, while rapporteur Albert Dess (EPP) suggested a 2019 start date.

The committee also rejected Mr. Dess' proposal that methane emissions should not be calculated towards cars' climate impact so as to encourage take up of natural gas as a fuel. The Commission should conduct an impact assessment evaluating the appropriate conversion of methane emissions into CO2 equivalent to ensure gas and petrol cars are treated similarly, MEPs agreed.

MEPs also want to require mandatory fitting of so-called "eco-motoring" systems, namely two types of in-vehicle technology, fuel consumption meters (FCMs) and gear shift indicators, for all

new vehicles from 2019. The Commission's own impact assessment on the use of FCMs for light-duty vehicles indicated that they could lead to fuel efficiency savings of 2-3% per year.

MEPs adopted their position by 66 votes to one and gave Mr. Dess a mandate to open negotiations with member states. Member states have nearly finished drafting their position and are likely to negotiate a final deal with the Parliament before the end of this year, a Council source said.

The Parliament vote came as a major international scandal surrounding emission test rigging by Volkswagen continued to unfold. The environment committee held an emergency debate on the scandal, putting the Commission under increased pressure to step up their response to the issue. Green MEP Bas Eickhout called on the Commission and national governments to recall all vehicles fitted with any software which facilitates lower emissions during testing. "Given EU law already prohibits defeat devices that reduce the effectiveness of emission control systems, such a recall is a necessity," he said.

11. EC Urges Quick Adoption of Diesel Test Rules; Then It Caves to Industry

The European Commission has said it is "crucial" in the midst of the Volkswagen scandal that member states clarify their position on new emissions test rules for diesel cars this month. Industry Commissioner Elżbieta Bieńkowska told transport ministers that member state representatives have until 16 October to submit written comments on the Commission's recent proposals for details of the new real world emissions driving test for pollutants (RDE).

The Technical Committee for Motor Vehicles - or TCMV comprised of member states and the Commission was then scheduled to vote on the final rules on 28 October.

Ms. Bieńkowska said that although discussion around the RDE started in 2011, four years before the Volkswagen affair broke, the emissions rigging controversy has added urgency to finalizing the RDE rules. "Public opinion will not forgive us if we do not do this," she said.

But to the surprise of many, at the October 28th meeting, Ms. Bieńkowska scaled back the proposed tougher tests at the insistence of EU governments concerned about potential cost increases for car makers, highlighting the industry's political clout even after Volkswagen's deception. She agreed to let real-world NOx emissions exceed permissible limits by as much as 110% for a further 27 months until January 2020, abandoning an earlier proposal for a maximum 60% overshoot until autumn 2019 after nations including Germany demanded more leeway.

She also agreed to allow a 50% **permanent** overshoot of the actual EU limit - 80 milligrams a kilometer - as of January 2020 instead of sticking to a goal of enforcing the legal cap in September 2019.

National bureaucrats grouped in the EU's Technical Committee for Motor Vehicles - or TCMV - endorsed the revised proposal.

"This is a scandalous and cynical decision by EU governments," Bas Eickhout, a Dutch member of the European Parliament who belongs to its Green group, said in a statement from the 28-nation assembly's headquarters in Strasbourg. "We will now look at all legal means to challenge this."

How car manufacturers cheat at tests

Vehicle certification requires new car models to go for a 20-minute simulated drive on a "rolling road" while hooked up to test equipment. The car's computer optimises the engine to run cleanest during the test

Electronic Control Module

ECM monitors and regulates air-fuel mixture, engine temperature, ignition and exhaust gas temperature.

This controls emissions and fuel economy

Operating modes

ECM has **On Road** mode for normal driving and **Dyno** – test mode. **ECM is calibrated by manufacturer for best results during test mode**

Screen displays drive cycle to be followed

Data acquisition cabinet

Speed-matched fan to simulate vehicle cooling

Dyno driver accelerates and brakes to match drive cycle

Chassis dynamometer

Dynamometer test procedure

Vehicle placed on dynamometer with only its driving wheels rolling. ECM switches to Dyno mode, otherwise test procedure could be interpreted as dangerous driving situation

18cm

Flow meter measures fuel economy

Tailpipe emission measuring equipment

Rear wheels are locked

Source: U.S. Department of Energy, Argonne National Laboratory

© GRAPHIC NEWS

Europe is trying to balance consumer and producer interests a month after Volkswagen caused political uproar by admitting to having fitted diesel engines with software to cheat US checks on NOx emissions. The

company's deception is potentially politically explosive in Europe because more than half the cars in the region are powered by diesel and many EU nations have struggled to meet clean-air goals meant to reduce human sicknesses and premature deaths.

Amid an EU-wide recall of 8.5 million Volkswagen cars ordered by German authorities, Ms. Bieńkowska shied away from forcing her original proposal onto the agenda of ministers instead opting for the mid-ranking officials in the TCMV.

She defended her move by saying the EU is leading the way on better testing of NOx from autos and by pledging to seek improvements to the system in Europe for type approving vehicles. "The EU is the first and only region in the world to mandate these robust testing methods," she said in a statement from Brussels. It also effectively doubled the emissions standards that it adopted in 2007 for diesel engines. "And this is not the end of the story. We are working hard to present a proposal to strengthen the type-approval system and reinforce the independence of vehicle testing."

Auto Industry Claims It Needs Time To Also Meet CO2 Targets

The European Automobile Manufacturers Association (ACEA) welcomed the decision as a “robust but realistic package that will address the key environmental issues under a two-step approach”.

ACEA said that it fully understands the need for step 1 of real driving emissions (RDE) testing to commence from September 2017 **for new vehicle types**, and has always been committed to this. However, as a direct consequence, a substantial number of diesel models will have to be phased out earlier than planned. As well as having serious economic implications, industry says, this will make it more challenging for manufacturers to meet the 2021 targets for CO2 emission reductions.

Amid an EU-wide recall of 8.5 million Volkswagen autos ordered by German authorities, Bieńkowska shied away from forcing her original proposal onto the agenda of ministers more in the spotlight than the mid-ranking officials in the TCMV.

But What About Clean Healthy Air?

Her diluted proposal hasn't cleared all the hurdles yet because it faces a yes-or-no verdict from the European Union Parliament. The assembly weighed into the controversy over Volkswagen's test cheating on October 27th, taking a firmer stance than Bieńkowska did in her original proposal. In a nonbinding resolution, the 751-seat Parliament said the real-world emissions of nitrogen oxide from vehicles should heed the EU limit by the end of 2017. (See Story below.)

The Parliament's Green group wasn't the only one to lash out at the compromise deal in the TCMV. “This is a shameful stitch-up, which once again puts the interests of carmakers ahead of people's health,” Catherine Bearder, a U.K. member of the assembly's pro-business Liberal group, said in a statement.

The Commission argued that uncertainties in the testing method justify setting a higher long-term limit but this is likely to be legally challenged, according to campaign group Transport and Environment. Earlier this year the Commission started infringement procedures against the UK, Germany, France and Spain, for failing to meet NO2 standards. Yet these governments, plus those of Italy, Romania and Sweden among others, pushed for the Commission to weaken its vehicle emissions proposals, claims Transport and Environment. It is now unclear how the countries will meet the required air pollution limits. Failure to do so may result in substantial fines. Only the Netherlands voted for stronger limits.

Greg Archer, clean vehicles manager at Transport & Environment, added: “Citizens will wonder why their governments would rather help carmakers that cheat emissions tests than give them clean air to breathe. This disgraceful and legally questionable decision must be rejected by the European Parliament. It seems governments would rather citizens die as a result of diesel exhaust emissions than require carmakers to fit technology typically costing €100.”

“For car-making countries, it's like dieselgate never happened,” said Mr. Archer.

NOx emissions can cause emphysema, bronchitis, heart disease and asthma. The government says NO2 is responsible for 23,500 premature deaths a year.

The International Council on Clean Transportation, which uncovered the diesel emissions scandal, says that technologies to control both CO2 and NOx emissions from diesel cars already

exist and are being deployed by some car manufacturers. But “a high conformity factor is indicative of poor emissions performance,” a paper by the group said last month. If the tests used a conformity factor of two, it would be “the first time that the Euro standards will be changed to raise an emission limit instead of lowering it,” the study said. The EU has chosen factors of 2.1 for 2019 and 1.5 for 2021 and beyond.

The ICCT study added that emissions would be considerably higher than indicated anyway because the new test would not count emissions from cold-starts.

12. EU Parliament Urges Creation of Car Emissions Authority

On October 27th, the European Parliament asked the European Commission to create a European Union-level surveillance authority to stop car emissions cheating scandals. The vote on a non-legislative resolution was seen as a response to the Volkswagen emissions cheating scandal.

The parliamentarians, voting in Strasbourg, France, also said that companies found to have violated EU emissions rules should not be able to fire employees in order to pay penalties. Instead, the resolution read, companies should “retain profits rather than distributing dividends, to cover as much as possible of the cost arising from the infringement of applicable law.”

The resolution passed 493–145, with 25 abstentions.

The Parliament held the vote as a means of telling the European Commission—the EU's executive branch—what kinds of rules it wants to see in the commission's anticipated draft law on emissions, parliamentary spokesman Jaan Soone told reporters. “The rules passed today will be sent to the EU Council and the EU Commission,” Soone explained. “It's up to the commission now to decide whether to make a proposal along the guidelines proposed by the Parliament. After this occurs, the EC would then send this proposal to the EU Council's transport minister.” (As noted above, it is clear that the Commission did not heed the Parliament's advice and actually weakened the proposal only one day later.)

Key elements of the resolution:

- The Parliament is deeply concerned about the delay on the part of Member State authorities and the Commission to act upon the evidence of serious and persistent exceedances of emissions limit values prescribed in EU law for vehicles in normal use;
- Welcomes the investigations being undertaken in several Member States and other countries globally regarding vehicle emissions test results manipulation; supports the Commission's call to national surveillance authorities to proceed with extensive checks on a wide variety of makes and models of vehicles; considers that any such investigation should involve the Commission; insists that investigations be conducted in a transparent and effective manner, with due consideration for the need for consumers affected directly by any lack of conformity that is discovered to be kept well informed;
- Demands that the Commission report back to Parliament on the results of these investigations, in writing, by 31 March 2016;
- Demands that where defeat devices are found, Member State authorities take all necessary action to remedy the situation and apply the appropriate sanctions in accordance with Article 30 of Directive 2007/46/EC and Article 10 of Regulation 715/2007/EC;

- Urges the Commission to adopt and implement the new Real Driving Emissions test cycle without any further delay, and to bring it into force for regulatory purposes; welcomes the report on the reduction of pollutant emissions from road vehicles (the Deß report, A8-0270/2015) adopted by Parliament's Committee on the Environment, Public Health and Food Safety on 23 September 2015, and in particular the requirement that the Commission 'introduce a real driving emissions test for all vehicles type-approved or registered from 2015 to ensure the effectiveness of emission control systems and enable the vehicle to comply with this Regulation and its implementing measures, **with a conformity factor reflecting only the possible tolerances of the emissions measurement procedure in place by 2017**'; urges the Member States and the Commission to swiftly come to an agreement on a framework for the test cycle on that basis;
- Notes that according to the Commission's current plans the Real Driving Emissions tests would be used only for NOx emissions; **calls for the RDE tests to be implemented for all pollutants**;
- Stresses the need for **significant strengthening of the current EU type-approval regime**, including greater EU oversight, in particular as regards the market surveillance, coordination and follow-up regime for vehicles sold in the Union, the power to require Member States to launch control procedures based on evidence, and the ability to adopt appropriate measures in the event of breaches of EU law;
- Calls on the Commission to **redesign the current type-approval regime in order to guarantee that type approvals and certificates by national competent authorities can be checked independently and reassessed by the Commission, if appropriate, and to ensure an EU-wide level playing field, and that the implementation of the EU regulations can be effectively enforced**, and the shortcomings of implementing measures corrected, without unnecessarily increasing the administrative burden;
- Finds it of utmost importance that **the Commission and all Member State competent authorities have the right to reassess type approval and certificates of conformity, to require recalls and stop the placing on the market of vehicles when they have evidence of non-compliance with the EU emissions limit values under the Euro 5 and 6 Regulation or any other requirement provided for by the type-approval regime**;
- Considers that **the upcoming review of the Type Approval Framework Directive must expand and specify the conformity-of-production requirements in order to ensure that a sufficient and representative sample of new models taken off production lines at random are tested on an annual basis, using RDE tests to check their compliance with EU pollutant and CO2 limit values**; calls, furthermore, for improved in-service testing of vehicles already in use on the road, also on the basis of the RDE procedure, in order to verify the in-service conformity of vehicles at different mileages as required under the regulation; calls for the improvement of on-road surveillance through periodic technical inspections to identify and repair vehicles which are found not to be in compliance with EU law;
- Calls on national authorities to **show no tolerance towards so-called 'vehicle testing optimization'**, whereby practices such as the over-inflation of tires, the removal of side-mirrors, taping up of gaps between body panels to reduce aerodynamic drag, the use of special engine and gearbox lubricants that are otherwise not used in engines, the removal of auxiliary equipment such as stereos, and testing at the maximum allowed ambient temperature are common, thus unacceptably accentuating the difference between in-lab testing and the consumer's experience on the road;

- Stresses that consumers must be able to exercise their rights easily, as provided for in Directives 1999/44/EC, 2005/29/EC and 2011/83/EU;
- Calls on the Commission, being responsible for competition in the EU internal market, in cooperation with national surveillance authorities, to ensure a level playing field among competitors serving the market;
- Recalls the need to fully and thoroughly transpose and implement European rules concerning the functioning of the internal market in all Member States and furthermore calls on European and national market surveillance authorities to investigate all claims of fraud vigorously;
- Asks for the Commission to **ensure that information provided to consumers under the EU car labelling directive (1999/94/EC) is accurate, relevant and comparable; considers that the labels should be based on the emission values and fuel efficiency that correspond to real-life driving;**
- **Is concerned about the discrepancy of the CO₂ emissions declared in official test results and those measured in real driving conditions; calls, therefore, for swift agreement on the WLTP correlation for fleet average CO₂ targets, with due respect for the principle of ‘comparable stringency’ but without credit being given for unfair flexibilities in the current test procedure, in order not to weaken the 2021 target;**
- Calls on the Commission to take the present revelations into account when formulating new policies in the field of sustainable transport; asks the Commission to take further action to strengthen the EU strategy for sustainable, resource-efficient systems for road and other modes of transport; refers to the approach set out in the 2011 Commission White Paper ‘Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system’ and points out its potentially large contribution to effectively reducing the real emissions from transport and improving urban mobility; urges the Commission to put a greater effort into bringing forward the suggested measures covered by the White Paper and encourages the Member States to support this;

13. More Dieselgate Fallout

VW Forced To Recall 8.5 Million Cars in Europe

Volkswagen has been told by the German Federal Motor Transport Authority (KBA) that it must recall 8.5 million European cars in response to the diesel emissions test scandal. Volkswagen said it welcomes the decision which follows KBA’s review of its action plan submitted last week.

Initially Volkswagen proposed that cars affected by the installation of so called defeat devices could be subject to a voluntary “retrofit”.

Volkswagen said in a statement that 2.4 million of the cars to be recalled are in Germany. Eleven million cars are affected globally.

The German government is assessing a response plan submitted by Volkswagen, transport minister Alexander Dobrindt said. In it, Volkswagen confirmed that 8.5 million diesel cars are affected by the manipulations in Europe, all of which have Euro 5 engines. The different sizes of engine - 1.2, 1.6, and 2.0 liters - will require different software updates, which will start to be rolled out early next year. It will be mandatory for Volkswagen to follow any changes to the response plan that the German government recommends, Mr. Dobrindt added.

Around 600 Swiss File Criminal Complaints Over VW Diesel Scandal

Around 600 people so far have filed criminal complaints in Switzerland connected to the Volkswagen emissions cheating scandal, the Swiss Office of the Attorney General said in a statement. The cases filed with seven different cantons will be combined into one investigation led by federal prosecutors to streamline the process.

VW Will Cut Spending By \$1 Billion, Launch All-Electric Phaeton in EV Push

Volkswagen Group said it will reduce investment spending at the VW brand by 1 billion euros a year, as well as switch to a different diesel emissions treatment technology and launch an all-electric Phaeton sedan as the flagship for a new focus on electrification.

VW will increase its focus on long range plug-in hybrids and high-volume electric vehicles with a range of up to 300 km (186 miles), the company said in a statement. The automaker also said it will speed up cost cuts and will overhaul the VW brand model strategy. "The Volkswagen brand is repositioning itself for the future. We are becoming more efficient. We are giving our product range and our core technologies a new focus," VW brand Chief Herbert Diess said in the statement.

Diess said the brand will create room for forward-looking technologies by speeding up an efficiency program that targeted 5 billion euros in savings and operational improvements by 2017.

In November, VW announced 85.6 billion euros of investments across the group between 2015 and 2019, with half earmarked for modernizing and expanding the model range.

Audi, the biggest earnings contributor at VW Group, is continuing an efficiency program that started before the diesel scandal hit, spokesman Juergen de Graeve said. The luxury-car unit planned last year to rein in annual costs by about 2 billion euros to offset spending on new technology, according to people familiar with the matter.

With diesel technology under pressure, VW plans to develop standardized components for electric vehicles with ranges as far as 500 km (310 miles). VW said it will develop a new modular electric architecture dubbed MEB for compact vehicles for all group brands. The architecture will be designed for all body structures and vehicle types. It would allow the development of "particularly emotional vehicle concepts" and an all-electric range of 250 km to 500 km, the statement said.

At the Frankfurt auto show last month, VW said it would launch 20 battery-powered and plug-in hybrid vehicles by the end of the decade, including the first all-electric Porsche based on the Mission E concept and a production version of Audi's e-tron Quattro concept.

The shift includes redesigning the Phaeton as an all-electric model. The current model's gasoline and diesel versions will be axed. The next-generation Phaeton is due to hit showrooms by about 2019-2020.

VW wants to extract 3 billion euros (\$3.41 billion) in price cuts from its suppliers to help mitigate the costs of the emissions scandal, German newspaper Handelsblatt reported. This would be part of a broader cost-cutting program including pay, marketing and sponsoring activities to help VW bear an estimated 40 billion euros in costs of the scandal, the paper reported, citing company sources.

The cuts come amid renewed criticism for Volkswagen's handling of the scandal, which affects some 11 million cars worldwide. The company was far too slow to disclose its use of software to enable its diesel cars to pass U.S. laboratory emissions tests despite far higher on-road pollution, said Stephan Weil, prime minister of the German state of Lower Saxony and a VW board member. "This admission should clearly have come much sooner -- a further serious mistake," Weil told the Lower Saxony parliament today. "Who decided this course of action and when is also something that's being investigated."

VW presented German authorities with a plan last week for fixing affected cars in its home market. Regulators are still reviewing the proposals, which range from a software update to new parts for diesel engines.

Volkswagen, in Future Cars, to Adopt New System for Controlling Diesel Emissions

Volkswagen said that it would revamp the technology it uses for controlling diesel exhaust in future models. The company said it would switch to a selective catalytic reduction system to decrease emissions on its diesel engines in Europe and North America.

The approach is conceptually similar to an emissions control system that Volkswagen considered until 2007, when it adopted the system now at the center of its scandal. The alternative technology, which is not part of its plan to fix cars already in circulation, was rejected by the company at the time as too costly.

The change involves adding a tank of a urea-based fluid to clean exhaust and affects only coming models, said Peter Thul, a spokesman for Volkswagen. "Diesel vehicles will only be equipped with exhaust emissions systems that use the best environmental technology," Herbert Diess, chairman of the company's car brand, based in Wolfsburg, Germany, said in a statement. The change will take place "as soon as possible," according to the statement.

Volkswagen has submitted a detailed proposal to the authorities of how it planned to remove from its vehicles in Germany the software used to cheat emissions tests. The Federal Motor Transport Authority is reviewing Volkswagen's proposal to remedy the issue on its 1.2-, 1.6- and 2-liter diesel engines. The German Transport Ministry has said there will be a recall for affected vehicles, with a software fix for the 2-liter engines expected to be ready early next year. The 1.6-liter motors, however, would require further modifications that cannot be expected before later in 2016. No information has been released regarding a fix for the 1.2-liter engines.

In testimony before the United States Congress and the British Parliament, Volkswagen officials indicated that fixes would vary by country, given varying emissions standards. Paul Willis, general manager of the Volkswagen Group in Britain, said that repairs for diesels sold in Europe would not involve the installation of a new emission filtration system using urea as an additive. But such a remedy is expected in many vehicles in the United States, which has tougher standards for emissions of nitrogen oxides, which have been linked to a host of respiratory and cardiovascular illnesses.

Fallout from the scandal has ricocheted throughout Germany, Europe's largest economy, with a benchmark survey showing that economic sentiment dropped more than expected in October, to 1.9 points from 12.1 in September. "The emissions scandal at Volkswagen and sluggish growth in emerging markets are dampening the economic outlook for Germany," the ZEW research institute, which conducts the monthly survey, said in a statement.

Germany's economy minister, Sigmar Gabriel, said that he felt confident the problems at Volkswagen, a source of more than 750,000 jobs in the country, would not inflict permanent damage on the national economy.

Matthias Müller, Volkswagen's new chief executive, said the automaker would require more than the €6.5 billion it had initially set aside to bring vehicles with illegal software into compliance with emissions standards, but he added that it was too soon to provide a new estimate.

Werner Hoyer, the head of the European Investment Bank, said the institution was checking to see whether Volkswagen had violated its agreements to uphold certain environmental goals. Speaking to the German daily *Süddeutsche Zeitung*, Mr. Hoyer said that he was "very disappointed" by Volkswagen's actions and that the institute he leads would conduct "very thorough investigations" into how the automaker spent the estimated €4.6 billion it borrowed from the bank since 1990 for the development of engines with lower emissions. In case of impropriety, he said, the investment bank would consider demanding that the loans be repaid.

France to Increase Taxes on Diesel Fuel

The French government has announced a rise in the price of diesel fuel just weeks ahead of Paris Climate Change Conference. "The government will increase taxes on diesel over the next five years (...) with the aim of bringing the price of both fuels (petrol and diesel) to roughly the same level", it said in a statement.

Diesel fuel taxes will rise by one cent for each liter in 2016 and 2017, "generating an income of more than 245 million euros", said French Secretary of State for the Budget Christian Eckert.

Diesel is currently taxed at some 20 cents cheaper per liter than petrol and represents 80 per cent of fuel volumes sold in the country and 56 per cent of new-car sales.

The current way of taxation has led to more and more cars running on diesel and it "has triggered legitimate concerns among many French people about the impact of air quality", said the government.

In return, the government, which fears criticism over its tax policy, said it will use the new income to reduce local tax for modest households and pensioners.

(The National Assembly also passed a two billion euro plan in tax cuts for low-income households.)

The measure comes ahead of the Climate Change Conference in Paris (30 November – 11 December) which aims to secure a pact on greenhouse gases and amid revelations that Volkswagen has equipped 11 million of its diesel cars worldwide with software that can dodge pollution controls.

Spanish Court Charges VW with Fraud

Representatives of Volkswagen Audi Spain have been ordered to appear at Madrid Central Court on 10 November to answer charges of fraud, environmental crime and other offences. The order was issued by the court's investigating magistrate on the recommendation of Spanish state prosecutors, who found sufficient grounds to pursue accusations initially lodged by a trade union and two consumer protection groups.

The charges relate to Volkswagen's practice, admitted by the car manufacturer, of fitting software to diesel vehicles allowing it to cheat on emissions tests.

Volkswagen will be required to produce documentation relating to sales of its vehicles in Spain, the company's management structure, the manufacturer of the software at the center of the allegations, and measures being taken to rectify damages to consumers.

The court will also ask the Spanish industry ministry to submit all the information it has collected on the case, including the findings of the US Environmental Protection Agency, which first detected the practice.

The agriculture and environment ministry will have to produce evidence of any tests it has carried out to determine exhaust emissions from vehicles which have been allegedly manipulated.

"To the best of our knowledge, these are the first criminal proceedings to have been initiated" in the EU, a spokesman for the NGO Transport & Environment said. But France, Italy, the UK, Germany and China have all said they will investigate Volkswagen, he added.

Volkswagen Audi Spain declined to comment on the court case.

Volkswagen Pushed Into Loss by Emissions Scandal

Volkswagen has reported its first quarterly loss for at least 15 years after taking a big charge to cover the costs of its emissions scandal. VW said it had set aside €6.7bn (\$7.4bn; £4.8bn) to cover the scandal, leaving it with a €2.52bn pre-tax loss for the third quarter of the year.

Despite the scandal the company still expects sales to grow this year. However, VW said it expected profits for the full year to be "down significantly".

In the three months to the end of September, vehicle sales fell 3.7% and production fell 11.6% compared with the same period last year. However, VW said that it was still forecasting a rise of up to 4% in sales revenue for the whole of the year.

The €6.7bn charge is likely to be the first of a raft of costs that the company has to face. Chief financial officer Frank Witter said: "No penalties or fines [or] compensation to customers have been included [in the €6.7bn charge].

"The financial burden is enormous but manageable... but we will emerge stronger and leaner than ever before."

VW Must Consider Compensating Motorists, Transport Secretary Says

Volkswagen must consider offering compensation to motorists whose VW vehicle has lost some of its resale value as a result of the diesel emissions scandal, the UK transport secretary said. Speaking in the House of Commons, Patrick McLoughlin said the German company would have to address the impact of the scandal on secondhand VW diesel prices. VW has admitted that 1.2m cars and commercial vehicles in the UK have been fitted with the defeat devices that allowed them to cheat emissions tests.

When asked by Jim Shannon, Democratic Unionist MP for Strangford, whether VW should meet the “full financial implications” of falling resale values, McLoughlin said: “That is one of the issues which I think VW will have to address in due course.”

The transport secretary also pledged to push VW to fix the affected vehicles by the end of 2016. “I will be looking to Volkswagen who have, it has to be said, acted disgracefully in this whole episode, to ensure that they live up to the expectations which they promised originally,” McLoughlin said. “We will be working to make sure that does happen.”

VW has hired accountancy firm Deloitte and law firm Jones Day to investigate who fitted the device into its vehicles. It is understood that the carmaker believes a group of between 10 and 20 employees were at the heart of the scandal.

The transport secretary said the automotive industry would take steps to ensure that a similar scandal never happens again. He said: “Industry across the piece, as far as this is concerned, is very embarrassed about what has happened and I am pretty sure they will take proper action to make sure the right regulatory measures are taken.”

No other carmaker has admitted using defeat devices, but there remain concerns among campaigners about discrepancies between test results and the on-road performance of certain vehicles.

McLoughlin defended plans for new emissions tests in Europe which will come into force from 2017. Critics have claimed the new regime is not strict enough. Carmakers will be allowed to exceed the legal limit for nitrogen oxide emissions by 110% between 2017 and 2020, and then by 50% after that, a move designed to give the industry time to adapt.

McLoughlin said: “The current difference between laboratory testing and real world emissions is unacceptable. “The UK has been actively pressing Europe to address this problem and the agreement we secured in Brussels to introduce real-world testing in 2017 is an important milestone. “What is important is that we got agreement for real-world emission testing right across the whole of Europe and this has been something which has been objected to in the past. We pressed for it in May. I am very pleased that we achieved it.”

Software Update to Fix Most Cheating VW Engines

A download of updated software will be sufficient to fix most of Volkswagen group’s vehicles equipped with diesel engines that enable cheating of emission pollution tests, Czech car maker Škoda Auto and the Transport Ministry told the Czech News Agency. Only cars with 1.6-liter diesel engines will need a replacement of some component parts besides the updated software.

Volkswagen and subsequently other branches of the group, including Škoda Auto, are to present a technical solution to the problem by the end of November.

According to the Transport Ministry, there are about 106,000 Škoda cars and tens of thousands of VW group cars equipped with 1.2-litre, 1.6-litre and 2-litre EA 189 engines meeting the Euro 5 emission standard in the Czech Republic. These are able to pass homologation tests and switch to an eco-friendly regime.

According to Transport Ministry spokesman Tomáš Neřold, emission tests of VW group's cars in an independent testing lab will continue in the following weeks. So far, the tests have confirmed that current models of the group comply with standards.

After the technical solution is announced, the ministry intends to have some of the repaired cars tested, Neřold said. "We are discussing further procedures regarding the recall campaign in cooperation with German and British authorities," Neřold said.

Volkswagen has said recently it will launch a recall of the affected vehicles in January next year and the campaign will most likely take a year. It is not known yet whether the repairs will be mandatory or voluntary.

VW plans to carry out an intensive quality test of the planned technical solutions at the end of the year, and Skoda Auto will take part in the plan, Vitezslav Pelc, Škoda spokesman for the Czech Republic, said. "Like in the past, we will inform our customers about the planned measures regularly, in detail and in time. Irrespective of the planned repair campaign, all vehicles are technically reliable and in working condition. We will disclose more detailed information as soon as possible," Pelc said.

Škoda Auto has halted the project of second-generation Roomster shortly before its completion, server Auto.cz said, referring to a well-informed source. According to the server, the halt is connected with austerity measures introduced by Volkswagen due to the diesel engine scandal.

Škoda Auto will not comment on the speculations, Pelc said.

According to unofficial information from September, the 2G Roomster was to be launched in the middle of next year.

"Škoda Auto feels an ever falling demand for cars of the MPV segment on global markets, while the development of the SUV segment appears to be very dynamic. For this reason, the brand's priority will be to strengthen the model palette of the SUV category. We will release detailed information on the follower of the Roomster model later," Pelc said.

Škoda Auto ended the production of the first-generation Roomster after nine years in April this year. The total number of Roomster cars produced in Škoda's Kvasiny plant did not exceed half a million.

Investors Ask Automakers to Explain Emissions Lobbying

Leading European investment managers and pension funds controlling nearly \$1 trillion have joined forces to call for automakers to better explain how they have lobbied public bodies on emissions standards.

Nineteen investors including AXA Investment Managers, the fund arm of insurer AXA, and the Swedish national pension fund, wrote separate letters to 11 major automakers, retail investor watchdog ShareAction said in a statement.

Volkswagen, BMW, Honda, Daimler, General Motors, Ford, Fiat, Peugeot and Toyota all received letters requesting information on lobbying around emissions rules being debated in the United States and the European Union.

Another letter was sent to Carlos Ghosn, chief executive of Nissan and Renault, as both have been recognized as some of the best performing companies for CO2 emissions, the statement said.

The initiative comes after VW admitted rigging diesel emissions tests, knocking billions of euros off VW's stock market value and throwing the spotlight on practices across the industry.

"When it comes to the engagement underway between a company and the key regulations affecting it, there are often sparse details available to investors," Dylan Tanner, executive director at non-profit group InfluenceMap, which analyses and ranks companies on climate lobbying and influence, and which helped coordinate the sending of the letters.

"The Volkswagen case highlights the need for a much greater disclosure regime, both of the company's specific position on key legislation and its involvement in the policy process."

Germany's Gabriel Backs Incentives for Electric Cars

German Economy Minister Sigmar Gabriel warned against condemning diesel technology as a whole due to the emissions scandal at Volkswagen but said Germany needed to do better in switching to alternative engines. "I can only warn against calling diesel overall into question. We need to be careful not to throw the baby out with the bathwater," he said.

"In the USA three types of motor were checked, of which two were manipulated by Volkswagen but for a third motor there were no concerns at all about it not keeping to the emissions values," he said.

He added however, that he was in favor of introducing incentives to reduce the price difference between electric and conventional cars.

VW Credit Ratings Downgrade Said to Show Impact of Environmental Concerns

Environmental and climate risks are increasingly affecting corporate credit ratings as the example of Volkswagen AG's downgrade in October demonstrates, rating agency Standard & Poor's said in a report. The rating company identified 299 cases in which environmental and climate developments were a significant factor in influencing a revision or rating analysis, the company said on October 21st. It examined 38 industries since 2013, when it last changed its methodology.

A rating move or outlook change occurred in 56 cases, with most changes being linked to the oil industry, regulated utilities and unregulated power and gas producers, it said.

S&P downgraded Volkswagen to A- from A on October 12th citing the company's admission that it manipulated diesel engine emissions tests. "Alleged illegal behavior in the U.S., the inadequacy of internal controls, and the management of environmental and social risks were factors in our revised assessment of VW's management and governance, which was the reason for the downgrade," S&P said in the report.

Rating changes can be positive, the report added. S&P in April 2014 upgraded Tenneco Inc. to BB+ from BB, citing "its leadership position in clear-air products, an area that stands to benefit from stricter vehicle-emissions regulation and accounts for two-thirds of the company's revenues."

Hybrid Technology to Fill Autos Gap as Diesel Damaged By VW Scandal

The Volkswagen diesel emissions test rigging scandal could accelerate a shift toward gasoline-electric hybrid cars and plug-in electric hybrids - even as cheaper gasoline, for now, saps demand for green cars. Diesel technology, which had been seen, especially among European carmakers, as a mainstream solution to helping the industry meet tougher fuel economy and emissions regulations, now looks vulnerable - though it's far from finished.

"Anybody can, with certainty, guess what's going to happen ... This (VW) scandal is not going to make diesel more popular in the United States. This scandal is not going to make diesel more popular in Japan," Nissan Motor CEO Carlos Ghosn told reporters on the opening day of the Tokyo Motor Show.

With diesel potentially falling out of favor, automakers and their technology suppliers will likely turn to non-diesel solutions in a stricter regulatory environment.

Over the next five years and beyond, auto industry officials see hybrid technology - especially heavily electrified plug-in hybrid know-how - emerging more into the mainstream. Volkswagen itself is now looking closer at long-range plug-in hybrids and electric vehicles as it seeks to put the scandal behind it.

"If you take out diesel as a key solution ..., initially conventional hybrid technology, and then plug-in hybrids, will have to be used to fill the gap," said a person close to AVL, a privately-owned global powertrain specialist. "Beyond 2020, hydrogen fuel-cell cars will have to play a greater role."

That would go down well in Japan, where Prime Minister Shinzo Abe is pushing for a so-called 'hydrogen society', with the zero-emission fuel powering homes and cars.

Honda Motor operating Officer Toshihiro Mibe says hydrogen fuel-cell cars - including the company's first mass market model unveiled at the Tokyo show - are quietly gaining momentum. "Beyond 2020, we think diesel is not going to play a role at all in meeting fuel economy and emissions regulations," he told reporters. "Electrification is costly technology to pursue, but manufacturing costs ... are coming down fast and we will hit a point soon where costs for electrified cars will be cheaper than for diesel cars."

Any broader shift to plug-in hybrid technology will likely benefit automakers like Toyota Motor and General Motors, which are already up and running with plug-in hybrids, such as the Prius variant and Chevrolet Volt on the market.

"We believe hybrid cars' competitiveness might gain a lot more steam as a consequence of the VW scandal," a senior Toyota executive told reporters. "People who bought VW diesel cars in the U.S. are highly environmentally conscious. We hope (they) would switch to hybrids when they replace their diesel cars."

Similarly, as consumers turn to tried and trusted models, electrification parts suppliers such as Denso, Aisin, Bosch, Valeo, Delphi, LG Electronics, Panasonic, Continental and Visteon stand to gain business.

All-electric battery cars will likely be less prominent, industry experts say, because of their limited driving range and cumbersome re-charging.

In the shorter term, to meet regulatory requirements through to around 2018, conventional gas-electric hybrids, as opposed to plug-ins, should prove highly useful, experts added, as will be other fuel-saving technologies such as turbo-charging and ignition shut-on-and-off systems.

"Shorter run, we would see a continued downsizing of gasoline engines using turbo charging. We would also see more direct injection of fuel, more 3-cylinder and even 2-cylinder engines ...," the person close to AVL said.

But, with so much invested in capacity to produce diesel engines, industry executives aren't writing off the technology just yet. "We still believe in the future of diesel engines because they are in the trade-off of emissions and CO2, they are a very good option for many vehicles," VW brand CEO Herbert Diess told reporters at the Tokyo show.

Koei Saga, Toyota senior managing officer for powertrain technology, reckons diesel technology still has a role to play, especially in powering cars and trucks sold in emerging markets in Asia, South America and Africa, where affordability and fuel economy are key.

As regulations and testing methods become more stringent in developed markets, diesel technology would have to advance significantly, making it as expensive to make diesel-fueled cars as gasoline-electric hybrids. "It's hard to see diesel becoming a mainstream solution," Saga said.

14. GM's Opel Denies Violating EU Emission Standards

General Motors' subsidiary has vehemently denied a report by a German environmental lobby group claiming excessive emissions have been found in one of the carmaker's models. Opel called the claim "wrong and unfounded."

Opel insisted it had by no means violated European environmental standards. The message came in response to researchers claiming to have found excessive nitric oxide emissions for the carmaker's Zafira model.

Germany's environmental lobby group DUH alleged that emissions of the Zafira 1.6 CDTi multi-purpose vehicle had been found up to 17 times higher than the current Euro-6 limit would allow, citing tests conducted by the University of Applied Sciences in Bern, Switzerland. Researchers there had said emission levels went up drastically, surpassing the usual range when increasing friction resistance in the laboratory tests by letting the cars run on four rolls instead of just two.

In a letter to the DUH, Opel wrote the differences in emission levels were not replicable in its own tests.

"Software developed by GM doesn't contain any features to control whether cars are subjected to emission tests," Opel said. "The accusations at hand are unambiguously wrong and unfounded."

Opel complained that despite making several request, the DUH had not made available its test results or information detailing under which conditions the tests were carried out.

15. Commission Seeks Comment on Fuel, Emission Information

On October 19th, the European Commission called for comments on the effectiveness of a 1999 European Union law that requires information about fuel economy and carbon dioxide emissions to be included in sales material for new cars. The law, the Car Labeling Directive (1999/94/EC), obliges automakers and dealers to display fuel economy and carbon dioxide emissions information at point of sale and in advertising. The directive also obliges member states to produce and provide to consumers on request annual guides to the fuel economy and emissions of current car models.

Spokeswoman Anna-Kaisa Itkonen told reporters that the directive “has not been touched since 1999,” and the commission had received “many complaints from consumer associations” about how fuel consumption and emissions information is displayed. In particular, each EU member state has its own rules on the specific ways information is displayed and cars are labeled, leading to significant variation in application of the directive from country to country, Itkonen said.

The consultation document included questions on whether different labeling rules in different countries were undermining the intentions of the directive, which are to promote green car purchases by consumers and to encourage manufacturers to produce more fuel-efficient vehicles.

Itkonen added that the consultation on the Car Labeling Directive was “part of a scheduled evaluation” and wasn’t prompted by recent revelations about the use by Volkswagen of secret software to achieve better results in tests for emissions of nitrogen oxides than are generally possible in real driving conditions. Although the Car Labeling Directive covers carbon dioxide emissions and not nitrogen oxide emissions, a question had been included about including nitrogen oxide emissions information in car labels “in view of the recent events concerning VW,” she said.

The consultation asks whether the directive would have been “more effective” if it had included information on air pollutants.

The consultation is open through Jan. 15, 2016.

Greg Archer from T&E said that a review of the car labelling system, unamended in the past 16 years, is long overdue. “But there is no point developing new labels unless the information provided reflects the typical performance of the car on the road,” he said. Details of a new CO2 test, the Worldwide Harmonized Light Vehicles Test Procedure (WLTP), are being finalized by the Commission, but MEPs have expressed concern about the stringency of the new system.

The Commission said that consumer associations have made “many complaints” about the effectiveness of car labelling for understanding CO2 emissions, and that the lack of harmonized criteria across member states has led to large variations in the rules.

Consultants Ricardo-AEA, who are carrying out the current policy evaluation on behalf of the Commission, recommended in 2012 the development of a single EU-wide car label instead of the current practice where each member state designs their own label.

16. Major Automakers Considerably Under-Report Fuel Consumption: Magazine

With the car industry already reeling from the Volkswagen pollution cheating scandal, French weekly Auto Plus has reported that major brands considerably under-estimate real-world fuel consumption. The magazine said in its Friday edition it had tested fuel consumption of more than 1,000 models and found that on average it was 37.2 percent higher than reported by automakers.

Volkswagen has found itself in trouble for software that cheats official tests and lets many of its diesel engines spew out up to 40 times more pollution than permitted. The scandal highlighted the fact that car certification testing is done in laboratories under controlled conditions that are far from those on the roads.

Auto Plus found that recent Volkswagen and BMW diesels were consuming 55 to 65 percent more fuel than reported. The discrepancy in fuel consumption for some diesel engines compliant with the latest pollution requirements was up to 74.3 percent.

Diesel engines are popular in France, and French automakers Renault, Peugeot and Citroen were quick to defend their engines after the Volkswagen scandal broke. But Auto Plus found their latest diesel engines, which have to comply with Euro 6 emission rules, consumed 50 to 65 percent more fuel than reported.

The magazine complained about European regulations which certify vehicles under conditions "far removed from real (on-road) constraints".

Peugeot and Citroen said they would publish real-world fuel economy figures for their diesel vehicles vetted by an independent body.

So, who to trust? Auto Plus said "Japanese carmakers ... are those who cheat the least" in their reporting of fuel consumption figures.

17. EU CO2 Cuts Exceed 2020 Target

The EU overachieved on its 2020 emissions reduction goal already in 2014, with emissions down 23% on 1990 levels, according to the European Environment Agency (EEA). The EU is on track to cut emissions by 24-25% by 2020, depending on whether member states continue with current measures in place or implement additional measures already planned, the EEA said.

Emissions fell by 4% in 2014, partly due to an unusually warm year lowering energy demand, according to the EEA.

All member states except Austria, Belgium, Ireland and Luxembourg are on track to meet their individual greenhouse gas reduction targets for sectors outside of the emissions trading system (ETS).

Climate commissioner Miguel Arias Cañete said the emissions reduction sends a "strong signal ahead of the Paris climate conference that Europe stands by its commitments". The EU has already "taken the first steps" towards implementing its pledge to cut emissions by 40% by 2030 under a new climate agreement to be signed in Paris, he added.

But the EEA warned that new policies will be needed to meet the EU's 2030 target as emissions reductions are set to slow down after 2020. Member states' projections show that even if additional measures being planned are implemented, the EU would only achieve a 30% cut by 2030, it said.

NGOs warned the EU against using the fact that it has overachieved on its 2020 objective already as an excuse to lower its efforts after 2020. If the EU wants to show leadership in the run-up to

Paris, it should agree to cancel all unused emissions allowances as part of the revision of the ETS, CAN Europe said.

Renewable energy made up 16% of the EU's energy mix in 2014, according to preliminary EEA estimates. The bloc is on track to meet its 20% renewables target by 2020, but only 20 member states look set to meet their individual targets.

The EU would also meet its 2020 energy efficiency target if energy consumption continued to fall at the current pace, the EEA said. But member states' combined ambition to save energy falls 3% short of the 20% target, it added.

18. Volvo Plans All-Electric Vehicle by 2019

Volvo Car Group is developing its first all-electric car and broadening its range of plug-in hybrid vehicles. The first step will be the introduction of plug-in hybrid versions of the larger 90-series and 60-series cars, the Gothenburg, Sweden-based manufacturer said in a statement on October 15th. Volvo has a plug-in hybrid version of the new XC90 SUV on the market and will offer the same option for the S90 sedan that is set to be introduced next year. The carmaker said it will offer the fully electric vehicle by 2019. "We believe that the time has come for electrified cars to cease being a niche technology and enter the mainstream," Chief Executive Officer Hakan Samuelsson said. Volvo expects 10 percent of its cars sold globally to be electrified by 2020.

19. Denmark Reports Drop in Shipping Emissions at Test Sites

The sulfur content of air tested at three shipping monitoring stations in Denmark fell significantly this year after the adoption of new sulfur dioxide emissions limits, according to the Danish Centre for Environment and Energy (DCE). The English Channel, Baltic Sea and North Sea were designated Sulfur Emissions Control Areas (SECA) as of January 1st, meaning all vessels must use bunker fuel with a maximum of 0.1 percent sulfur content compared to 1 percent outside the zones. Individual nations are responsible for patrolling their waters to ensure compliance with the rules.

Measurements taken at the Anholt monitoring station between January and May noted sulfur content of 0.13 micrograms per cubic meter of air, compared to 0.43 in 2014, the DCE said. Two other stations noted similar falls in sulfur dioxide levels, it said. While the reductions were "most likely" due to the new SECA limits, the DCE said, meteorological factors combined with volcanic activity in Iceland could potentially skew the results. Full-year results will provide a more accurate picture, the center added.

Jorgen Brandt, head of the DCE's atmospheric modeling section, told reporters that the Danish figures also have not yet been compared with those of other SECA nations. "From our measurements we can detect a decrease of around 50 percent in the SO₂ concentrations compared to the past three to four years," he said. "The systems we operate are not the detection systems that are designed to measure SO₂ content in the plumes of individual ships. From our measurements, we cannot say how large a number of ships are complying with the legislation, only that a significant number are doing so."

According to an October 8th Environment Ministry statement, an artificial nose, or sniffer, has been fitted on the Storbelt, or Great Belt Bridge, which spans a major shipping lane linking the Baltic Sea to the North Sea and beyond. If measurements from the bridge show that a ship is using illicit

fuels, then authorities at the ship's next port of call are notified. A light aircraft has been fitted with a similar device to monitor major shipping lanes, the ministry said.

Despite the presence of the monitoring equipment, Brandt told reporters that it was likely some noncompliant ships will still "slip through the net." An official at the Danish Environment Ministry told the press that Danish prosecutors already have filed a lawsuit against the owners of a noncompliant vessel.

20. NABU Calls for Better Enforcement of Sulfur Emission Control Areas (SECAs)

During an expert discussion in the European Parliament the environmentalists criticized the fact that there is virtually no surveillance scheme in place to control if ships meet the required bunker quality standards when sailing the North and Baltic Sea or the English Channel. The European Sulfur Directive (2012/33/EU) however limits the sulfur content for ship fuels as of January 1st 2015 to a maximum of 0.1% for ships operating in European waters declared as Sulfur Emission Control Areas (SECAs) in order to limit the sector's massive contribution to air pollution levels. Although there is only limited data available at the moment Germany's leading environmental NGO NABU (Nature and Biodiversity Conservation Union) stated that the number of ships being non-compliant are expected to be well over acceptable levels. The experts explained this view by demonstrating the economic advantage for cheaters in combination with a serious lack of enforcement when it comes to surveillance and penalties.

NABU CEO Leif Miller said: "We definitely face a systematic malfunction if those market



participants are the losers who run ships on cleaner fuels and according to the rules. At the moment there is a huge incentive for ship owners to be non-compliant as cheaters save ten thousands of Euros per passage through the European SECA if they use the dirty fuel and the chance to get caught is virtually zero. Member states of the European Union definitely have to implement a sound grid of controls due to continuous monitoring devices on the ships' smoke

stacks, drones, mobile and stationary measurement stations and coast guard patrols in order to resolve this grievance. Moreover, penalties have to be raised and prosecution as well as exchange of data have to be coordinated between the countries. Otherwise the SECA rules have significant market distortion effects."

NABU's transport policy officer Daniel Rieger said it was important to make the European SECA work as it serves as role model for a global regulation respectively sulfur cap of 0.5% sulfur content from 2020 on. "We definitely see significant improvements of the air quality due to the tightened sulfur standards in the European SECA and in particular next to shipping routes but there is still much room for improvement. European member states should demonstrate that it is

feasible to facilitate enforcement and compliance both politically and technically. Since regulation for the shipping industry came late anyway we should safeguard its proper implementation in order to profit from this source's tremendous potential to reduce air pollution at a great cost-benefit ratio."

21. Shore Side Electricity: Key Policy Recommendations for Uptake

A new study¹ quantifies the economic and environmental potential of powering docked ships in European ports using local electricity networks. The authors give key recommendations on policy actions to enable implementation in European harbors.

Shipping is a large and growing source of greenhouse gas emissions. One billion tons are emitted each year worldwide and they comprised 4% of total EU emissions in 2010. As a first step towards including maritime transport emissions in greenhouse gas commitments, the European Commission (EC) has sought to establish a system² for monitoring, reporting and verifying emissions from large ships using EU ports.

When anchored in ports, ships usually use their auxiliary engines to generate electrical power for communications, lighting, ventilation and other on-board equipment. However, this fuel burning is associated with the emission of a range of pollutants including greenhouse gases like carbon dioxide (CO₂), sulfur dioxide (SO₂), and nitrogen oxides (NO_x), and other pollutants like particulate matter (PM).

Shore Side Electricity (SSE) involves connecting ships to the port electricity network while they are at berth. In the vast majority of locations, the energy mix used to produce SSE results in fewer emissions than burning fuel on the ships themselves. SSE can also benefit health as air pollutants are emitted at remote onshore electricity facilities, as opposed to ports near highly populated areas. For example, 85% of emissions from cruise ships are produced while the ship is docked.

A non-binding recommendation³, published by the EC in 2006, declared that Member States are responsible for establishing instruments and regulations for SSE.

Current legislation such as the Sulfur Directive clearly recognizes the use of SSE as an alternative to the requirement of using low-sulfur marine fuel, while the 2014 Directive on the Deployment of an Alternative Fuel Infrastructure requires Member States to ensure that SSE supply shall be installed as a priority in ports of the TEN-T Core Network, and in other ports, by 31 December 2025.

The study quantified the economic and environmental impacts of SSE in European ports by combining estimates of emitted air pollutants and energy demand with measures of fuel consumption and ship movements. In order to assess the market potential of SSE in all EU ports, an analysis used for 'typical' port types, representing cargo and passenger handling, was extended to all EU ports based on the types of traffic handled there.

¹ Winkel, R., Weddige, U., Johnson, D., Hoen, V., & Papaefthimiou, S. (2015). Shore Side Electricity in Europe: Potential and environmental benefits. Energy Policy. DOI: 10.1016/j.enpol.2015.07.013 , Contact: spapaefthimiou@dpem.tuc.gr

² Regulation (EU) 2015/757. See: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015R0757>

³ Commission Recommendation of 8 May 2006 on the promotion of shore-side electricity for use by ships at berth in Community ports: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006H0339>

The authors found that if all seagoing ships in European harbors used SSE by 2020, they would consume 3342 GWh annually — approximately 0.1% of Europe's electricity consumption in 2012. This corresponds to almost 620 kilotons of fuel being burnt by ships at berth. Importantly, cruise ships, which can use very large amounts of energy to power leisure and 'hotel' facilities while docked, would make up almost 40% of this consumption.

The anticipated health benefits of using SSE in Europe were calculated to be €2.94 billion for 2020, using results from the NEEDS⁴ project covering all major pollutants and all EU Member States and European sea territories. However, as marginal damage costs for PM were rated much lower in comparison to NO_x, and it is now known that PM is more dangerous for human health, the NEEDS methodology even underestimates the potential effects of air emissions and PM.

The authors outline several key messages for policymakers:

- Start-up financing for SSE should be actively supported by governments or the EU, and the business case for investment made. One potential model could be for port operators to invest in the power supply infrastructure and then to sell electricity to the berthing ships, particularly ships with high energy demands such as cruise and ferry ships.
- One major barrier to investment is that taxes are imposed on SSE, but not on fuels used in shipping. This could be addressed either by a tax reduction on electricity used for SSE or by added taxes on maritime shipping fuels. Some Member States have already used this possibility to promote SSE.
- Investing in SSE — accessible to all ships — would be more efficient than installing costly emissions abatement technology on individual ships, such as onboard exhaust gas desulfurization equipment (scrubbers), an alternative to low-sulfur fuel chosen by some ship owners.
- The potential of SSE production through renewables should be investigated, and funding developed to encourage use of smart-grids and renewable energy generators.
- SSE systems must be user-friendly and allow easy connection and disconnection. Only minor technical issues remain for implementation. For example, 99% of the world's ships operate at a frequency of 60 Hz, while European mains electricity uses 50 Hz. Converters must therefore be available to allow European ports to support ships' different systems.

22. Oslo to Ban Cars from City Center

Oslo plans to ban private cars from the city center by 2019 to cut pollution, the new city council has announced. The left-wing council, which is just taking office, presented its plans recently to reduce NO_x emissions by 60% by 2022 and to keep local pollution below health authorities' recommendations.

For Oslo as a whole, the Council plans to reduce the number of cars by 20% by 2019 and by 30% by 2030. But it is not yet clear how exactly they plan to achieve this, a council official said. To facilitate the change, the council plans to build 60 kilometers of bicycle lanes, to subsidize public transport more heavily and to provide incentives to buy electric bikes.

The Council wants Oslo to become fossil-fuel free by 2030. It targets 50% greenhouse gas emission cuts by 2020 compared to 1990 levels and 95% by 2030.

⁴ New Energy Externalities Development for Sustainability (NEEDS). See: <http://www.needs-project.org/>

The newly elected city council, made up of the Labor Party, the Greens and the Socialist Left, said the plans would benefit all citizens despite shop owners' fears they will hurt business. "We want to have a car-free center," Lan Marie Nguyen Berg, lead negotiator for the Green Party in Oslo, told reporters. "We want to make it better for pedestrians, cyclists. It will be better for shops and everyone."

Buses and trams will continue to serve the city center, and arrangements will be found for cars carrying disabled people and vehicles transporting goods to stores, the three parties said in a joint declaration.

Oslo city council will hold consultations, study the experiences of other cities and conduct trial runs, the parties said. Several European capitals have previously introduced temporary car bans in their city centers, including Paris last month. Some such as London or Madrid have congestion charges to limit car traffic.

Oslo has around 600,000 inhabitants and almost 350,000 cars in the whole city. Most car owners live outside the city center but within Oslo's boundaries.

23. UK Investigating Impact of EU Green Policies

The UK's lower house of parliament has started investigating whether EU environmental laws and targets have helped tackle environmental problems in the country. The inquiry by the environmental audit committee will examine the merits and drawbacks of determining environmental policy at an EU level for the UK and the implications of such policies on the UK environment. It is intended to inform the debate on the forthcoming referendum on EU membership.

It will cover all EU law, except the Common Agricultural Policy which is the subject of a separate investigation.

The possibility of a UK departure from the EU has already sparked vigorous discussion, with some experts warning that it could compromise domestic environment regulation and lead to increased costs.

The committee is requesting views on how effective EU environmental policies have been in addressing environmental issues in the UK and what work remains to be done. It also wants to know what impact EU environmental policies have had on affected British businesses.

Respondents are asked whether the right balance has been achieved between tackling cross-border environmental problems with a common EU framework, and allowing for distinct national approaches.

Views are also sought on how successful the implementation of EU environmental policy and the role of the EU as an international negotiator on environmental issues has been for the UK.

Interested parties can submit comments until 20 November.

NORTH AMERICA

24. ICCT Uncovers VW's Emissions Cheating Scandal

The Volkswagens were spewing harmful exhaust when testers drove them on the road. In the lab, they were clean. Those discrepancies in European tests on the diesel models of the VW Passat, the VW Jetta and the BMW X5 last year gave Peter Mock, European Director of the International Council on Clean Transportation (ICCT) an idea. Mock suggested replicating the tests in the U.S. The U.S. has stricter emissions standards than the rest of the world and a history of enforcing them, so Mock and his American counterpart, Senior Fellow John German, were sure the U.S. versions of the vehicles would pass the emissions tests. That way, they reasoned, they could show Europeans it was possible for diesel cars to run clean.

"We had no cause for suspicion," German said in an interview. "We thought the vehicles would be clean."



So began a series of events that resulted in Volkswagen AG admitting that it built "defeat device" software into 500,000 of its diesel cars from 2009 to 2015 that automatically cheated on U.S. air pollution tests. The world's biggest automaker now faces billions in fines, possible jail time for its executives and the undoing of its U.S. expansion plans.

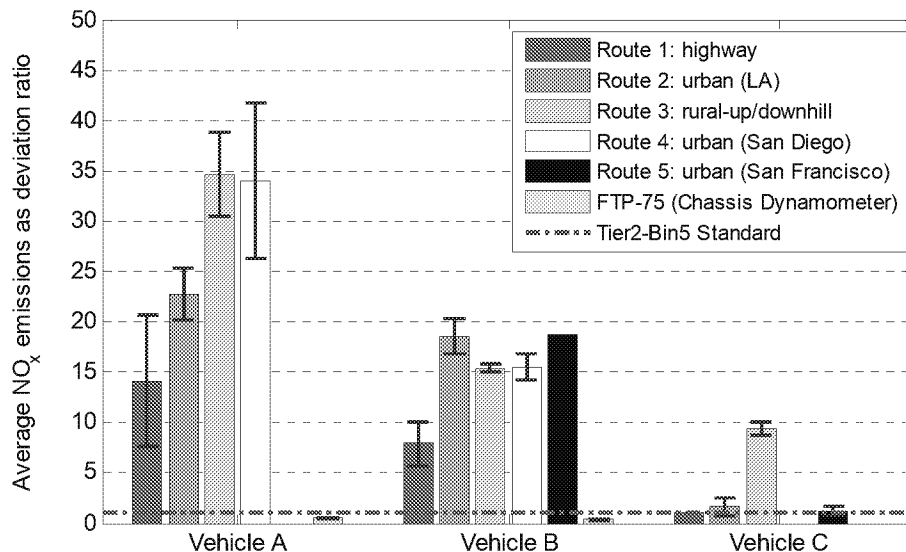
The Wolfsburg, Germany-based company said it is cooperating with regulatory investigations and has ordered its own probe.

German and his group actually were trying to prove exactly what Volkswagen has been claiming for years, that diesel is clean. They asked West Virginia University for help. The school's Center for Alternative Fuels, Engines & Emissions had the right equipment—a portable emissions measurement system to stick in the car trunk, attached to a probe for the exhaust pipe.

Testers drove the monitor-equipped diesels from San Diego to Seattle because if Volkswagen had gamed the emissions test, they couldn't be sure how, German said. In another cheating case years ago, he said, long-haul trucks were equipped with devices that allowed the engines to gradually discharge more and more harmful nitrogen oxides the longer the vehicle cruised at the same speed. The more emissions, generally speaking, the greater the engine power. The 1,300-mile trip under varying conditions would expose any such scheme in the VWs, German said.

Meanwhile, the California Air Resources Board tested the vehicles in their laboratories, and they passed.

Then German received the results of the real-world tests. "We were astounded when we saw the numbers," he said.



On the open road, the Jetta (Vehicle A) exceeded the U.S. nitrogen oxide emissions standard by 15 to 35 times. The Passat (Vehicle B) was five to 20 times the standard. The BMW X5 (Vehicle C) passed the road test.

California regulators and the U.S. Environment Protection Agency opened an

investigation into Volkswagen in May 2014. Talks between the parties went on for several months, with VW trying to replicate the West Virginia University results. The company said it had identified the reasons for the higher emissions and proposed a fix. That resulted in a recall of nearly 500,000 U.S. vehicles in December to implement a software patch.

The California agency continued to test VW cars after the recall began. It was concerned that real-world road tests couldn't confirm that the software patch was working. Sure enough, nitrogen oxide emissions were still in violation of California and U.S. laws. The agency shared those findings with Volkswagen and the EPA on July 8th.

At the same time, regulators were considering whether to certify VW's 2016 models for sale, a routine process for most automakers. Regulators said they wouldn't approve the cars unless the company resolved the questions about real-world tailpipe pollution. VW engineers continued to suggest technical reasons for the test results. None of the explanations satisfied regulators, who indicated the models wouldn't be certified.

"Only then did VW admit it had designed and installed a defeat device in these vehicles in the form of a sophisticated software algorithm that detected when a vehicle was undergoing emissions testing," the EPA said in its letter to VW on September 18th.

The VW investigation covers seven years' production of diesel cars, including the VW Jetta, Golf, Beetle and Passat and the Audi A3.

"We have no idea if this is also going on in China and Europe, but we definitely think the question should be asked, especially since the agencies in those places don't have the expertise and the legal authority that they have here in the U.S.," German said.

Volkswagen has struggled to gain a foothold in the U.S., the world's second-biggest car market, with a strategy built in part on touting the efficiency of fun-to-drive "clean diesel." Now those vehicles have been shown to be higher polluting. Diesel versions of the Beetle, Golf, Jetta and Passat comprise more than a quarter of the brand's sales in the U.S. and are a vital part of the company's strategy for meeting tougher U.S. fuel-economy standards going into effect in coming

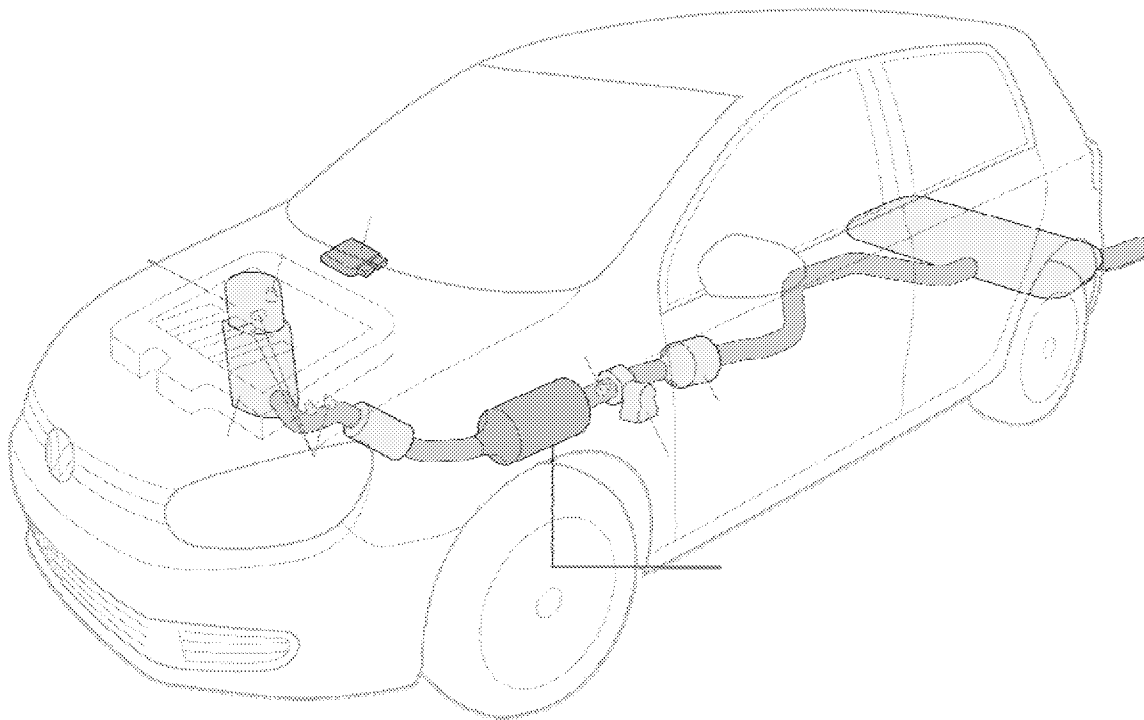
years. More than other automakers, VW has chosen to focus on diesel technology instead of electric vehicles or hybrids.

Volkswagen said that 11 million of its diesel cars worldwide in four brands: Volkswagen (5 million), Audi (2.1 m), Škoda (1.2 m) and Seat (700,000) as well as 1.8 million vans were equipped with software that was used to cheat on emissions tests.

How Did the System Work?

Vehicles were equipped with dual calibrations designed to defeat regulatory emission standards. A low emission, *certification calibration* was activated during the regulatory emission test cycle (such as FTP-75). A high emission *road calibration* was used during real driving.

A sophisticated software algorithm in the affected vehicles determines which calibration should be used. The software detects when the car is undergoing official emissions testing, and turns full emission controls on—only during the test. The effectiveness of these vehicles' pollution emissions control devices is greatly reduced during all normal driving situations. This results in cars that meet emissions standards in the laboratory or testing station, but during normal operation, emit NO_x at up to 40 times the standard.



Exhaust system of a Volkswagen Golf

Volkswagen has used two basic types of technology to reduce emissions of nitrogen oxides from diesel engines, by either trapping the pollutants or treating them with urea. The first type is shown here. Components include:

- Main computer
- Engine control module
- Diesel oxidation catalytic converter
- Muffler
- Oxygen sensor
- Diesel particulate filter
- Exhaust valve
- Temperature sensors
- Nitrogen oxide trap

This system traps nitrogen oxides, reducing toxic emissions. But the engine must regularly use more fuel to allow the trap to work.

The car's **computer** could save fuel by allowing more pollutants to pass through the exhaust system. Saving fuel is one potential reason that Volkswagen's software could have been altered according to researchers at The International Council on Clean Transportation.

Which Cars Are Affected?

The Environmental Protection Agency has said it will order Volkswagen to recall seven of its American car models with the affected engine type, for a total of about 500,000 vehicles.

- Volkswagen **Jetta** 2009 to 2015
- Volkswagen **Beetle and Beetle Convertible** 2012 to 2015
- Volkswagen **Passat** 2012 to 2015
- Audi **A3** 2010 to 2015
- Volkswagen **Jetta Sportwagen** 2009 to 2014
- Volkswagen **Golf** 2010 to 2015
- Volkswagen **Golf Sportwagen** 2015

The Fallout

Germany Says VW Manipulated Emissions in EU

Germany's transport minister said that Volkswagen has confirmed that diesel cars in Europe were also "affected by manipulations" used to falsify emissions test results in the US. Minister Alexander Dobrindt's comment responds to a string of questions about how far-reaching Volkswagen's misconduct has been after it admitted last Friday to the use of illegal "defeat device" software for achieving artificially low emissions test results in the US.

So far 500,000 cars have been recalled in the US. Volkswagen also said that 11 million cars are fitted with the software worldwide.

Germany has launched a national investigation into the matter. Mr. Dobrindt said that "vehicles in Europe with 1.6 and 2.0 liter diesel engines were also affected by the manipulations", according to reports. The German transport ministry confirmed the information.

The German government is working with Volkswagen to identify exactly which models of car are affected and how many. Checks on other manufacturers' vehicles will also be made, the minister added.

While internal investigations are underway in Germany, France and Italy, pressure is growing on other countries to act.

James Thornton of environmental law group ClientEarth called on national governments to respond quickly and assess the scale of the breach within their own jurisdictions.

Merkel's Climate Crusade Put at Risk

German Chancellor Angela Merkel's lectures on environmental responsibility could ring a little hollow as she heads to New York. Merkel, who for years has straddled between pushing to reduce global warming while protecting her country's auto industry, is faced with Volkswagen AG's emissions-cheating scandal just as she travels to the United Nations to cajole leaders into making binding commitments ahead of a global climate summit in Paris late this year. Those efforts follow a Group of Seven summit she hosted in June, where Merkel, herself a former environment minister, extracted pledges to stamp out fossil fuel emissions by the end of the century.

The German chancellor has built a reputation as a climate crusader during the past decade by shepherding her nation through a transition to renewable resources and away from nuclear energy, outstripping other European Union member states in seeking to cut carbon emissions by 40 percent of 1990 levels by 2020. Her push, nonetheless, has often bumped up against the demands of Germany's auto industry, which she successfully helped block tighter EU carbon emissions standards two years ago. The country is also home to the Mercedes, BMW, Porsche and Audi luxury brands.

Ferdinand Dudenhoeffer, director of the Center for Automotive Research at the University of Duisburg-Essen, faulted Merkel's government for not being more proactive in pushing the auto industry to reduce pollution, saying the chancellor had done too little to promote electric cars. While Merkel has publicly stated her goal is 1 million electric cars on German roads by 2020, her government has done little in the way of incentives, unlike in neighboring France, to get consumers to buy such vehicles.

A day before the U.S. Environmental Protection Agency announced that VW admitted to systematically cheating on air pollution tests for years, Merkel lauded the auto industry for its contribution in fighting global warming. Speaking at the International Auto Show in Frankfurt Sept. 17, she said initiatives by German automakers such as electric-car technology had offered an "important contribution" to the country's climate goals. "I believe those that produce the least emissions in autos will also be those who have the greatest success worldwide," Merkel said in the speech.

Those ambitions took a hit after the EPA accused VW of cheating. Beyond the collapse of VW's stock price and a potential \$18 billion in fines, the hit to the reputation of the Wolfsburg, Germany-based carmaker could cast a shadow on Germany's image as a nation awash in solar panels and wind turbines.

"We expected better from Volkswagen," Cynthia Giles, the EPA's assistant administrator for enforcement, said Sept. 18.

The scandal won't change Merkel's message as she heads to the UN to push for stricter climate change measures, her chief spokesman, Steffen Seibert, said in Berlin when asked what would be the political impact of VW's emissions cheating. "Our climate policy speaks for itself," Seibert

said. "It's recognized the world over that Germany is one of the driving forces toward a positive resolution as we move to the Paris talks."

Hours before the EPA announcement September 18, Merkel told a gathering of Germany's National Academy of Sciences that world leaders must agree to binding targets as part of efforts to limit global warming to 2 degrees Celsius (3.6 degrees Fahrenheit) this century. "We need a really credible perspective toward long-term decarbonization" in Paris, Merkel said in the speech in the eastern German city of Halle.

Still, there are limits to her crusading on the matter. In 2013, Merkel defended her decision to block a draft European Union law that sought to cut carbon dioxide emissions, saying a delay was needed to more closely evaluate the rules' impact on industry. She said protecting jobs also plays a role in such matters. The skirmish ended the following year when a compromise to the tightened cap eased potential costs for carmakers such as VW.

That balancing act was on display again at the Frankfurt car show. "We have to ensure politically that what's doable can indeed be translated into law, but what's not doable mustn't become European law," Merkel said. "Otherwise the auto industry will work somewhere with higher carbon emissions—and we can't want that."

Volkswagen Target of Criminal Probe

The U.S. Justice Department is conducting a criminal investigation of Volkswagen AG's admission to cheating on federal air pollution tests, according to two U.S. officials familiar with the inquiry. Volkswagen said it is cooperating with regulators. The U.S. officials described the inquiry on condition of anonymity because it is a continuing investigation. The violations could result in as much as \$18 billion in fines, based on the cost per violation and the number of cars.

The Wolfsburg, Germany-based automaker plunged as much as 23 percent Sept. 21 to 125.40 euros in Frankfurt, wiping out about 15.6 billion euros (\$17.6 billion) in market value. The stock closed at 132.2 euros, its lowest in more than three years.

Criminal inquiries can take months or years and lead to charges against individuals and companies. They also can result in fines and deferred-prosecution agreements, such as the one recently struck with General Motors Co., to spur companies to improve their behavior and address problems revealed during the investigations.

The U.S. accusations are "grave" and must be clarified swiftly, said Stephan Weil, prime minister of the German state of Lower Saxony, which owns 20 percent of Volkswagen's voting shares. "Possible consequences can be decided after that."

The European Commission also said it is taking VW's cheating seriously and is in contact with U.S. regulators and the company about details of the case.

Analysts at Kepler Cheuvreux cut their recommendation on Volkswagen stock to hold from buy, reducing their target price 27 percent to 185 euros. Volkswagen faces not only a short-term drop in sales and a hit to its reputation but also the longer term risk of litigation in the U.S., the analysts wrote in a statement.

Volkswagen Director Says Staff Acted Criminally; Chief Executive Resigns

A Volkswagen board director who represents the state of Lower Saxony, which has a controlling stake in the carmaker, has said some staff acted criminally in cheating emissions tests. Olaf Lies, Lower Saxony's economy minister, also said the board only found out about the scandal just before it was announced, even though it was known about in the US for more than a year.

"Those people who allowed this to happen, or who made the decision to install this software, they acted criminally. They must take personal responsibility," Lies told BBC's Newsnight programme. "It's about finding out who was responsible, who knew about it and when they found out."

"We only found out about the problems in the last board meeting, shortly before the media did. I want to be quite open. So we need to find out why the board wasn't informed earlier about the problems when they were known about over a year ago in the United States."

Lower Saxony owns 20% of Volkswagen, allowing the state to exert influence over the company and to block actions it opposes. Lies and Stephan Weil, Lower Saxony's prime minister, sit on the company's 20-strong supervisory board, which monitors and appoints top executives.

The company's chief executive, Martin Winterkorn, resigned last week over the scandal. German prosecutors have said Winterkorn, who has denied responsibility for the scandal, was under investigation.

Lies said the board had no idea what the total cost of the scandal would be. Fines in the US alone could be about £12bn and law firms are lining up to bring civil cases against the company. "Huge damage has been done because millions of people have lost their faith in VW," said Lies. "We are surely going to have a lot of people suing for damages. We have to recall lots of cars and it has to happen really fast."

Brussels Urges Countries to Investigate VW Scandal

The European Commission has asked all member states to investigate the implications of the Volkswagen emissions scandal for cars sold in their territory and "report back". Member states need to "ensure that EU pollutant emission standards are scrupulously respected", the Commission said.

The UK transport minister urged industry commissioner Elżbieta Bieńkowska to launch an EU investigation. The minister called for a "Europe-wide investigation into whether there is evidence that cars here have been fitted with defeat devices".

The UK, Germany, France and Italy have all announced national inquiries in the past week.

Further detail on the vehicles carrying the software have emerged. Audi, which is part of the Volkswagen Group, said 1.42 million of its vehicles in Western Europe were fitted with defeat devices, including 577,000 in Germany. This is part of the 11 million affected cars Volkswagen has already acknowledged.

Commission Moots Earlier Car Test Reform

The start date for a new car emissions test in Europe may be brought forward following the Volkswagen scandal, the EU industry commissioner hinted. Asked whether the revelations about Volkswagen falsifying car emission results would accelerate the introduction of the new test procedure, Elżbieta Bieńkowska said she saw political will from member states. But it is too early

to say what the exact timing might be, she told journalists after a meeting of the EU Competitiveness Council. The final technical specification should be agreed by the end of the year, possibly within the next month, she added. (See outcome above.)

The Commission last week urged all member states to join Germany, France and Italy in investigating the implications of the scandal after the world's biggest carmaker admitted fitting 'defeat devices', enabling cheating in emissions tests, to 11 million vehicles worldwide.

The practice was first detected by US regulators. But Ms. Bieńkowska said that the Commission does not have "any evidence so far that something similar to the United States has happened in Europe".

Member states have agreed that the Commission will "lead the process and facilitate coordinated action in the sector", even though it does not have the power to enforce regulation in the automotive sector, Ms. Bieńkowska said.

The new real-driving emissions test in development will more accurately measure air pollutant emissions in real-life driving conditions. MEPs have called on the Commission to introduce the test by 2017.

The Commissioner also said that the Commission plans to "reassess" its proposal for the revision of the type approval system in light of the Volkswagen case.

The Commission plans to update member states on the diesel emissions test issue by the next Competitiveness Council on 30 November.

Volkswagen Halts 4,000 UK Vehicle Sales Amid Emissions Scandal

Volkswagen has suspended the sale of 4,000 vehicles in the UK in the wake of the diesel emissions scandal, the company said. The vehicles contain the EA 189 engines which are fitted with software that was used to con emissions testers in the US.

A company spokesman said: "As a voluntary measure we have suspended the sale of unsold diesel vehicle stocks that have the EA 189 engines." He added that around 4,000 vehicles were affected across the Volkswagen, Audi, Skoda and Seat brands.

VW to Fix 11 Million Diesel Cars

The Volkswagen Group has said that all 11 million of its cars carrying emissions test-rigging software will be "retrofitted". This includes 5 million Volkswagen passenger cars and 2.1 million Audis.

Millions of cars in Europe will be affected. Volkswagen UK said that 1.2 million of vehicles will be refitted, including Audis, SEATs, Škodas and Volkswagen commercial vehicles. Volkswagen has already recalled 500,000 cars in the US.

Volkswagen reiterated that all of its Euro 6 diesel engines are unaffected by the scandal.

National websites will be set up to help affected customers, Volkswagen said. It assured that all affected cars are roadworthy and safe to drive.

In response to the scandal, the Dow Jones Sustainability Index removed Volkswagen from its ranks. "Volkswagen will no longer be identified as an industry group leader in the 'Automobiles and components' industry group," a statement on the Dow Jones website said.

SMMT Chief Speaks Out Against Reports of Widespread Fixing

Suggesting other brands alongside Volkswagen have cheated emissions tests is wrong said the head of the Society of Motor Manufacturers and Traders - and there is not widespread attempts to falsely improve results. SMMT chief executive Mike Hawes told the National Air Quality Conference: "Consumers are right to be concerned following the events of the past 10 days. "But we must remember the actions of one company do not mean collusion. "Implicating other brands or companies would be unfair and wrong."

He also said it would be "wrong to penalize all diesels". "The latest diesel vehicles are the cleanest ever, effectively reducing nitrogen oxide levels by 92% compared with earlier generations." "They make a significant contribution to climate change targets, an environmental challenge which cannot be ignored.

"We can't throw stones at the entire emissions testing procedure because of one instance of cheating."

He also sought to quash suggestions about how manufacturers 'cheat' emissions testing. Vehicle manufacturers "cannot and do not", he said:

- Remove mirrors, seats, windscreen wipers – or any other components
- Disconnect the alternator
- Tape over panel gaps
- Use special oils and lubricants that are not in production vehicles
- Fit special tires or overinflate them
- Alter wheel alignment
- Use higher gears than in normal use.

"We recognize the current regulations for testing are out of date," Hawes said. "We want, for consumers and our own industry's integrity, a new emissions test that embraces new technologies, and which is more representative of on the road conditions."

"We cannot allow this current scandal to detract from vital progress towards the implementation of these new tests."

France Unveils Special Testing Measures for Auto Emissions

A special French commission investigating vehicle emissions unveiled special testing measures aimed at detecting cars that use techniques designed to evade pollution limits. At a vehicle testing center about 19 miles south of Paris, French Environment Minister Ségolène Royal said the government was seeking to "restore confidence" to the public in the wake of the Volkswagen AG emissions scandal.

France, where nearly two-thirds of cars are powered by diesel, has emerged as a central player in the ongoing VW scandal. Diesel cars also make up about half of the global sales of the country's two auto makers, PSA Peugeot Citroën and Renault SA.

Ms. Royal last week launched a special commission that would oversee the testing of 100 cars under real-world conditions. Testing experts said the first 10 cars to be examined will be Volkswagen models, including some that are known to be equipped with the special software that allowed the company to deceive emissions tests in the past. Those cars "will help determine a testing protocol used to trap other fraudulent cars," said Beatrice Lopez de Rodas, director of UTAC, the agency that will conduct the tests.

Cars will be tested both in the lab and on an outdoor road circuit, she added. The lab tests will be slightly altered from past procedures to avoid triggering any software-defeat devices, Ms. Lopez de Rodas said. Alterations may include putting the cars in reverse, since prior tests never verified emissions of cars going backward.

Ms. Royal said her department was in contact with the U.S. Environmental Protection Agency, the first regulator to report that Volkswagen had installed software on some diesel cars to make emissions appear lower in tests, though she said the French had received little information because the EPA is pursuing a legal case against Volkswagen. "They haven't been very talkative," she said.

ARAI Begins Probe on Volkswagen Cheated Emission Tests in India

Asked by the government to probe whether Volkswagen has manipulated emission tests in India as it did in the US, automotive testing agency ARAI said it has started the process and has sought details from the company on the issue. "We have sought details from Volkswagen and are awaiting their response," ARAI (Automotive Research Association of India) Director Rashmi Urdhwareshe told PTI.

When asked if ARAI would pick up random samples to test, she said: "We are yet to decide on that."

Urdhwareshe said the testing agency will work as per the guidelines of the Ministry of Heavy Industries.

When contacted, a Volkswagen India spokesperson declined to comment stating "the investigations are still running".

Heavy Industries Secretary Rajan Katoch had said that the ministry has asked ARAI to inquire if VW manipulated emissions tests in India as it did in the US where it faces fine to the tune of USD 18 billion.

The allegations against Germany's largest car maker were initially raised by the US Environmental Protection Agency, which last week ordered it to recall nearly half a million diesel cars.

VW has admitted that 11 million cars worldwide were fitted with the software that helped in manipulating emission tests. It is now facing investigations in the US, South Korea, France, Italy, Canada, Germany and the UK. Australia has said it is monitoring the situation.



VW China Says 1,946 Diesels May Have Rigged Emissions Systems

Volkswagen Group says 1,946 diesel Tiguan crossovers imported and sold in China may have emissions systems designed to work properly only when tested in labs by regulators.

The vehicles are fitted with VW's EA189 four-cylinder diesel engine, VW China said in a statement released Saturday.

Volkswagen has started an investigation to determine whether the cars sold in China belong to the same batch of diesel vehicles whose emissions were rigged, the office said. The office noted that none of the other imported vehicles or any of the vehicles built by VW's two China-based joint ventures are involved in the emission rigging.

In China, VW has joint ventures with two major state-owned Chinese automakers, FAW Group Corp. and SAIC Motor Corp.

For the first eight months, VW's various brands sold 2.26 million vehicles in China, down 5.8 percent year on year.

VW Brand Ekes Out U.S. Sales Gain in September

Volkswagen of America finished a scandal-ridden month with roughly flat U.S. sales, defying forecasts that a mid-month halt to diesel vehicle sales and a black eye to its brand image would hammer its September results. The VW brand sold 26,141 vehicles last month, an increase of just 145 units, or 0.56 percent, from a year earlier. Analysts polled by Bloomberg had forecasted a 6.7 percent decline, on average.

VW halted sales of all models powered by 2.0-liter diesel engines on September 19th. Meanwhile, the EPA is withholding certification on 2016 diesel models pending evidence that they comply with U.S. emissions standards.

The September comparison is against a poor showing in September 2014, when VW sales fell 19 percent as the industry grew 9 percent. Despite the added boost this year from Labor Day sales falling in September rather than August, VW's September deliveries were off 19 percent from the 32,332 units it sold in August.

Diesel-powered models of the VW Golf, Passat, Jetta and Beetle had been a rare bright spot for the brand this year, accounting for about 20 percent of U.S. deliveries through September. A prolonged freeze on diesel deliveries would damage VW's chances of holding U.S. sales steady from 2014.

Before the stop-sale order, VW had sold 3,060 diesels in September, down 46 percent from a year earlier, according to a VW spokeswoman. Diesels accounted for 12 percent of VW's total September volume.

VW has big trust issues to overcome. Just one in four vehicle owners currently has a favorable opinion of VW, compared with three out of four prior to the scandal, according to a survey released by consultancy AutoPacific Inc. Some 64 percent of the 500 vehicle owners surveyed said they no longer trust VW in light of the scandal, the survey found.

VW Emissions Cheat Estimated To Cause 59 Premature US Deaths

Nearly 60 people will die prematurely from the excess air pollution caused by Volkswagen cheating emissions tests in the US, according to a new study. The first peer-reviewed estimate of the public health impacts of VW's rigging of tests for 482,000 diesel cars in the US found that if the company recalls all the affected cars by the end of 2016, more than 130 further early deaths could be avoided.

The study, published in the journal *Environmental Research Letters*, concluded that most of the 59 premature deaths were caused by particulate pollution (87%) with the rest caused by ozone exposure (13%). Most of the deaths were estimated to have occurred on the east and west coasts of the US.

The number of deaths was reached by looking at the amount of extra pollution emitted between 2008 and 2015 by the VW cars fitted with the defeat devices.

Particulate and ozone air pollution in the US was estimated by the Environmental Protection Agency to cause around 164,300 premature deaths in 2010. Diesels still make up a relatively small share of the US car fleet.

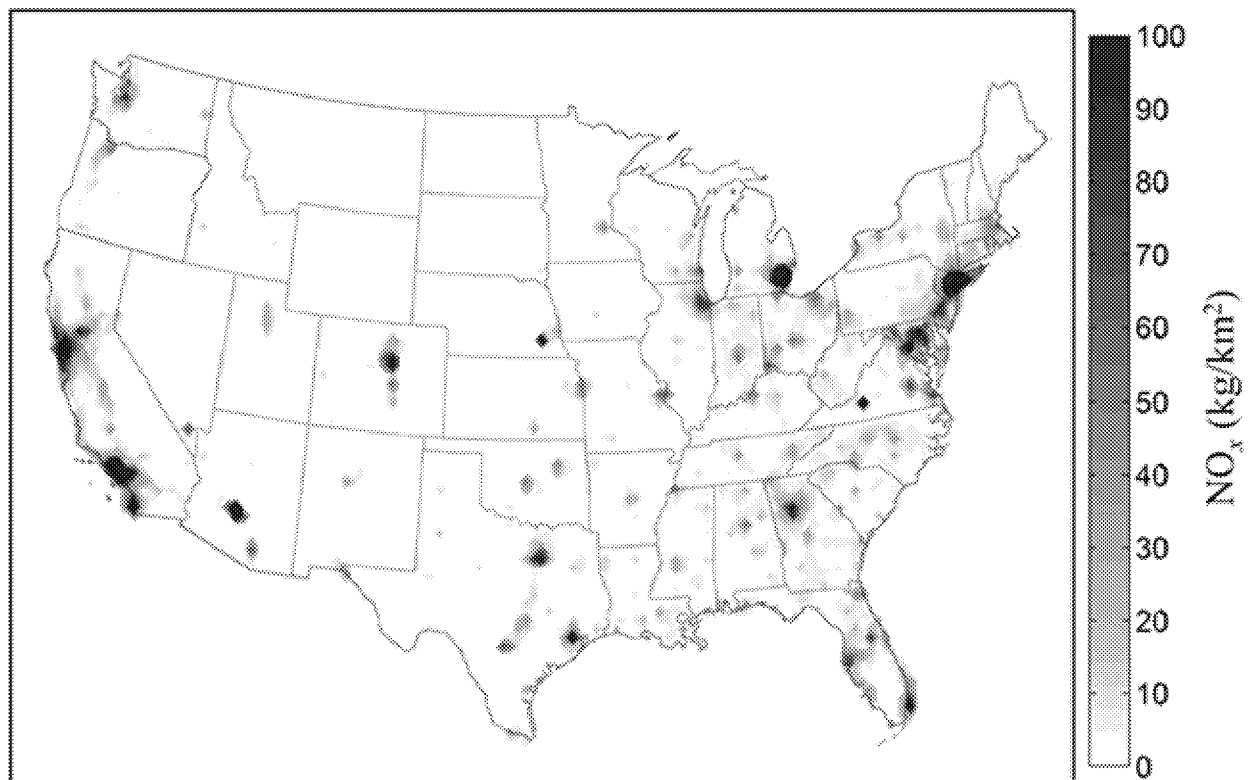
As well as the early deaths, the researchers estimated that the extra pollution from VW's cars caused around 31 cases of chronic bronchitis, 34 hospital admissions for respiratory and cardiac issues, and 120,000 days when people had to restrict their physical activity as a result. The economic cost of the health impacts was put at \$910m.

Air quality expert Dr Gary Fuller, of King's College London, said the research was a good assessment of the health impacts but it should not be assumed that the numbers could be extrapolated for other parts of the world, such as the UK.

"The very small number of diesels in the US, and the density of European cities means people are much more exposed to traffic emissions [in Europe] than in the US," he said. He added that the study may have underestimated the total number of premature deaths because it did not consider the direct impact of the toxic gas nitrogen dioxide.

Daniel Kammen, the journal's editor-in-chief and professor of energy at the University of California at Berkeley, who did not work on the study, said it was a "rigorous evaluation" of "potentially exceeding serious" impacts.

The study assumed the cars travelled 40.5bn km between 2008 and 2015, resulting in excess NOx emissions of 36.7m kg because of the cheating of emissions tests.



Distribution of estimated actual excess VW light duty diesel vehicle NOx emissions summed over 2008 through 2015 (kg km⁻²). The median value of emissions is used for each year. Emission density peaks at 446 kg km⁻²

VW has admitted that around 11m cars have been affected by the rigging worldwide, with 1.2m in the UK. It emerged early this week that the UK government has only one £100,000 machine able to test real-world emissions.

Dr Penny Woods, chief executive of the British Lung Foundation, said: “The VW emissions scandal is only the tip of the iceberg. Many cars that genuinely meet emissions standards in the lab actually produce much higher levels of emissions when used in the real world. It is clear, therefore, that we need a commitment to routine, independent real-world testing on all cars.”

Shortly afterward, carmakers in Europe won a one-year delay to such real-world tests and a weaker conformity factor, despite the VW revelations.

EPA Hasn't Decided If New Software on 2016 VW Diesels Is Legal

U.S. regulators haven't determined the legality of a new emission-control device on Volkswagen's 2016 diesel models, a top official said. Those models still have not been certified for sale by the U.S. Environmental Protection Agency.

The existence of the new software was made public by VW's top U.S. executive in testimony to a congressional subcommittee investigating the German automaker's diesel cheating scandal. The company has not confirmed speculation that the new software was configured before the wider emissions scandal broke on September 18th.

"We have a long list of questions for VW," said EPA Assistant Administrator Janet McCabe at a media briefing here. "When we have all of the answers, we will be able to make a determination" on whether the device is legal or considered to be a "defeat device" designed to circumvent U.S. emission rules.

Asked for additional detail, a VW spokesperson said the software "has the function of a warmup strategy which is subject to approval" by EPA. Typical diesel emission control systems are designed to be most effective when the engine is warmed up.

The EPA defines such software as an "auxiliary emission control device," or AECD, and describes it as any device that can change the operation of the vehicle's emission control system. The agency also requires automakers to disclose the existence of such a software device, including "a rationale for why it is not a defeat device."

VW said the EPA is evaluating the new software device, and that the automaker is "working with the regulators to continue the 2016 certification process" for VW vehicles equipped with the 2.0-liter diesel engine.

25. E.P.A. Unveils New Limit for Ozone

The Environmental Protection Agency has set the new national standard for ozone, a gas that often forms on hot, sunny days when chemical emissions from power plants, factories and vehicles mix in the air, at 70 parts per billion, tightening the current standard of 75 parts per billion set in 2008. Smog has been linked to asthma, heart and lung disease, and premature death.

The smog rule is the latest in a string of major new Clean Air Act pollution regulations that have become a hallmark of the Obama administration. Republicans and the coal industry have attacked the rules as a job-killing regulatory overreach. In August, the E.P.A. proposed climate change regulations aimed at greenhouse gas pollution, which could shutter hundreds of coal-fired power plants. But with the new ozone rule, the Obama administration appears to have tempered its environmental ambitions and sought a politically pragmatic outcome that would sit better with business.

The EPA estimates that the annual cost to the economy of the rule of \$1.4 billion, making it one of the most expensive regulations in history. But it estimates that those costs will be vastly outweighed by annual economic benefits of \$2.9 billion to \$5.9 billion, gained due to fewer premature deaths, missed school and work days, fewer asthma attacks and fewer emergency room visits.

26. California Board Backs New Limits on Carbon from Gas and Diesel

California air regulators approved a substantial cut to carbon pollution from gasoline and diesel fuels, a move that will force oil producers to reduce the amount of carbon generated by all transportation fuels in the state at least 10 percent by 2020. The action, coming two weeks after a stinging defeat for Gov. Jerry Brown's planned 50 percent cut in petroleum use by 2030,

signaled his administration's determination to press forward with an aggressive environmental agenda through the regulatory process rather than by legislation.

The rule approved by the California Air Resources Board was originally adopted in 2009 but was fought tenaciously by oil and gas companies, which were able to use legal challenges to keep it partially on hold. Although the cut is smaller than the governor had wanted, state regulators are bullish that it can help halve petroleum consumption, even though the legislation setting that goal failed.

"This policy is at the very heart of that goal of a 50 percent reduction — even just doing what we're doing now will get us pretty close," said Daniel Sperling, a member of the California Air Resources Board.

Thus far, Oregon is the only other state with a carbon fuel standard like California's. But Mr. Sperling said that as vehicle fuel efficiency rules also took effect and the policies combined to reduce oil use, he expected that other states would follow suit. "This is the best model in the world right now for how to reduce the carbon intensity of our fuels," Mr. Sperling said. "It's a model that I think we're going to see more and more other places imitate."

But any further efforts to push down petroleum consumption will run up against the same muscular opposition from the oil industry that was able to hand Mr. Brown one of his few big political defeats in recent years.

The change will hit consumers in the pocketbook: The state's own projections estimate that fuel costs could rise 13 cents per gallon by 2020 as a result of the low-carbon standard.

The Western States Petroleum Association, which led the charge against the 50 percent reduction, argued that low-carbon fuel rules had not been a success so far. "While there have been some advances in the biofuels technology since the standard was introduced," said the association's president, Catherine Reheis-Boyd, in a written statement, "there are still not enough low-carbon biofuels available in sufficient quantities to allow refiners to comply with the regulations."

But environmental groups pointed to advances in natural gas, biodiesel and the growing use of hybrid and electric cars in California as proof that the standard would not be difficult to meet. A spokesman for the Air Resources Board said that many oil producers were already hitting what the annual carbon reduction targets would have been, even though the targets were suspended during the legal proceedings. "We are on a path towards decarbonizing our transportation, and it's not going to be stopped," said Adrienne Alvord, the Western states director for the Union of Concerned Scientists.

Ms. Alvord added that as far back as the 1960s, California had set the pace for environmental regulations that were eventually adopted by the rest of the country. The state was first to regulate tailpipe emissions and catalytic converters, and she said the low-carbon fuel standard would likely be another example. "In California, we have more cars than people," Ms. Alvord said. "The opportunity here and the promise in terms of climate change is that if California can substantially lower transportation emissions, anyone can do it."

There remains a political risk for Mr. Brown if he continues to try to push his climate agenda through the regulatory process. Michael Shires, an associate professor of public policy at Pepperdine University, said that Mr. Brown lost in the Legislature on the 50 percent reduction

because the oil industry was able to make the case to many regular Californians — including many Democrats — that the change would be too costly to consumers. The issue, Mr. Shires said, exposed a divide between the Democratic power base in the wealthy coastal areas and the lower-income voters of inland California, who are more affected by issues like rising gas prices.

Already, California faces some of the highest gasoline prices in the nation. Environmentalists argue that more fuel-efficient cars will mean that even if prices go up, it will not cost consumers more. But if prices go up too far — or officials are seen as overreaching — voters may be willing to use a ballot initiative to reign in the Air Resources Board's power, Mr. Shires said. He pointed out that President Obama, who has also used the regulatory process to pursue a climate agenda thwarted by Congress, has not had to worry about such a possibility. "California has always been an environmentally progressive state," Mr. Shires said. "The question is now, at what cost? Some of those prices are coming to roost."

27. CARB Regulations Link with Dramatic Declines in Cancer Risk from Air Toxics

An Air Resources Board study, published in the prestigious scientific journal "Environmental Science & Technology," shows that the cancer risk from exposure to the state's most significant air toxics declined 76 percent over a 23-year period in California, a direct result of regulations targeting unhealthful emissions from these air pollutants.

The study quantifies emission trends for the period from 1990 through 2012 for seven toxic air contaminants (TACs) that are responsible for most of the known cancer risk associated with airborne exposure in California.

"These impressive reductions in California's most hazardous toxic contaminants in our air took place against a backdrop of more than two decades of steady growth in California, with a growing population, and increasing numbers of cars and trucks that used ever larger quantities of gas and diesel," Air Resources Board Chair Mary D. Nichols said. "There is no way these improvements in public health would have occurred without a strong, well designed program to reduce public exposure to toxic air pollution."

Significant findings of the study, "Ambient and Emission Trends of Toxic Air Contaminants in California," include:

- Thanks to state regulations, emissions from perchloroethylene from dry cleaners and hexavalent chromium from chrome plating, each dropped by more than 90 percent, and regulations already in place are expected to eliminate the remaining emissions of perchloroethylene and greatly reduce hexavalent chromium.
- Diesel particulate matter, which is emitted mainly from trucks and buses and is responsible for most of the airborne cancer risk in California, declined 68 percent, as a result of the State's regulatory efforts to clean up diesel exhaust. This reduction took place even while the state's population increased 31 percent, diesel vehicle-miles-traveled increased 81 percent and the gross state product increased 74 percent. The implementation of ARB's recent diesel engine retrofit and replacement requirements has accelerated fleet turnover to cleaner trucks, and significant additional reductions are projected statewide.
- Two other toxic air contaminants emitted mainly from mobile sources, benzene and 1,3-butadiene, declined by nearly 90 percent. This was largely the result of California gasoline reformulation in 1996.

- The aggregated collective cancer risk from exposure to these seven air toxics declined 76 percent over the 23-year period.

The paper makes clear that further significant reduction in cancer risk to California residents is expected to continue as a result of continued implementation of air toxic controls. Such controls are part of broader statewide transportation initiatives, including the Truck and Bus Rule and more



than a dozen rules focused on diesel equipment serving ports and railyards. Neighborhoods in freight corridors, including those near ports, will especially benefit.

The nearly 70 percent drop in harmful diesel particle pollution coincided with actions taken over the years, beginning in the 1990s, to reduce diesel emissions. In the 1990s, California adopted a reformulated diesel fuel program, started a heavy-duty diesel truck roadside inspection program, implemented particle pollution standards for urban transit buses and

established standards for off-road diesel engines. In 2006, California began requiring ultra-low-sulfur diesel fuel. And following the establishment of California's statewide Truck and Bus Rule in 2008, California began requiring diesel particulate filters on trucks, dramatically reducing diesel particulate matter, or soot, from the exhaust gas of diesel engines.

ARB regulations have reduced air toxics emissions from vehicles and their fuels, from stationary sources and from consumer products since the mid-1980s. In response to public concern, the California Legislature passed the Toxic Air Contaminant Identification and Control Act in 1984. Since then, ARB has implemented regulations to limit TAC emissions. In 1987, the California Legislature passed the Air Toxics "Hot Spots" Information and Assessment Act, which requires businesses to reduce risks from exposure to emitted TACs.

28. California to Help India in Reducing Air Pollution

Known for its pioneering environmental effort, California has agreed to help India reduce air pollution and combat climate change, State Governor Jerry Brown said after his meeting with Prime Minister Narendra Modi. The global fight against climate change was the center of discussion when Mr. Brown met PM Modi in San Jose.

The Governor and the Prime Minister agreed to a partnership between California and India, in which California would provide expertise to help India reduce air pollution and combat climate

change, said a statement issued by his office. "California and India have a very close and very dynamic relationship," said the Governor.

"California has pioneered cleaning up the air and cleaning up the environment over many years. Collaboration on a regulatory and technical level could be helpful. There's a lot to do," Mr. Brown said in the statement.

The meeting with Prime Minister Modi is the latest in a series between Governor Brown and world leaders. In Seattle recently, Brown met with Chinese President Xi Jinping after co-chairing the Third US-China Governors Forum.

29. Tractor Supply Company Agrees to Implement Company-Wide Compliance Program

The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Justice today announced a settlement with Tractor Supply Company Inc. and Tractor Supply Company of Texas L.P., that resolves allegations that the companies imported and sold more than 28,000 all-terrain vehicles, off-highway motorcycles and engines that did not comply with federal Clean Air Act certification and emission information labeling requirements. Under the settlement, Tractor Supply Company will implement a compliance plan to prevent future violations and mitigation projects to reduce air pollution. Tractor Supply Company will also pay a \$775,000 civil penalty.

"Emissions from vehicles and engines can cause serious health and environmental problems, so it's imperative that importers and vendors ensure their products comply with federal clean air standards," said Cynthia Giles, assistant administrator for EPA's Office of Enforcement and Compliance Assurance. "It is also critical that we ensure a level playing field for companies that follow the law -- that is a cornerstone of our environmental enforcement programs."

"We will take strong action to ensure that foreign-made vehicles and engines that are imported and sold in the U.S. comply with the same Clean Air Act requirements that apply to domestically-made products," said Assistant Attorney General John C. Cruden, for the Department of Justice's Environment and Natural Resources Division. "Under this settlement, Tractor Supply Company will not only pay a civil penalty and mitigate the potential adverse environmental effects of having sold noncompliant vehicles and engines, but will also take steps to ensure future imports and sales of its vehicles and engines meet Clean Air Act standards."

The Clean Air Act requires that every vehicle and engine sold in the United States be covered by a valid, EPA-issued certificate of conformity, which manufacturers obtain by certifying that vehicles meet applicable federal emissions standards for various pollutants. EPA and the Justice Department alleged that from 2006 to 2009, Tractor Supply Company imported from China and sold in the U.S. over 28,000 vehicles and engines, representing at least 10 vehicle and engine models that varied from the certificates of conformity that had been submitted to EPA.

The vehicles had adjustable carburetors that were not described in the applications for certification, were produced by different manufacturers than the ones specified in the applications, were manufactured prior to the dates of the certificates of conformity, had model names that were not identified on the certificates of conformity, or were significantly more powerful than described. Some engines were incorrectly certified as non-road engines rather than as recreational vehicles and some, like certain of the vehicles, were significantly more powerful than described in the allegedly applicable certificate of conformity. The Department of Justice and EPA also alleged that the emission control information labels on certain vehicles did not comply with federal

regulations, and that Tractor Supply Company provided an incomplete and inaccurate response to EPA's information request.

The settlement requires Tractor Supply Company to implement a rigorous corporate compliance plan that requires regular vehicle and engine inspections, emissions and catalyst testing, staff training and reporting for five years. Tractor Supply Company will also mitigate potential adverse environmental effects of equipment already sold to consumers, which is estimated by EPA to be up to 23.5 tons of excess hydrocarbon and nitrogen oxide emissions and 12.2 tons of excess carbon monoxide emissions.

Motorcycles, recreational vehicles and spark-ignited engines emit carbon monoxide, a gas that is poisonous at high levels in the air even to healthy people and is especially dangerous to people with heart disease. These machines also emit hydrocarbons and nitrogen oxides, which contribute to the formation of ground-level ozone, commonly known as smog. Exposure to even low levels of ozone can cause respiratory problems and repeated exposure can aggravate pre-existing respiratory diseases.

This settlement is part of an ongoing effort by the EPA to ensure that importers of vehicles and engines comply with the requirements of the Clean Air Act and that retailers exercise due diligence in ensuring that their products comply fully with the regulations. In a similar case settled with The Pep Boys - Manny, Moe & Jack (Pep Boys) in 2010, EPA required implementation of a similarly extensive corporate compliance plan.

Tractor Supply Company is a national rural lifestyle retail supply chain. The company has stores in 49 states and its headquarters is in Tennessee.

The settlement, lodged Sept. 30, 2015 in the U.S. District Court for the District of Columbia, is subject to a 30-day public comment period and approval by the federal court.

30. Clean Diesel Power a Key Component in Long Beach's Green Port Accomplishments

The Port of Long Beach announced this month that it has surpassed every air pollution reduction milestone set for 2014 due to air quality improvement programs, including cleaner diesel trucks, low sulfur fuel and the increased use of shore power for ships. According to an annual emissions survey, the port has reduced diesel particulates by 85 percent since 2005, nitrogen oxides (NOx) by 50 percent and sulfur oxides by 97 percent. These reductions surpassed the goals established under the San Pedro Bay Ports Clean Air Action Plan, according to Long Beach Port and community officials.

"The Port of Long Beach has shown that accelerating investments in new technology clean diesel trucks has propelled the port to both environmental and economic gains. It also lays the foundation for continued progress toward future goals," said Allen Schaeffer, the Executive Director of the Diesel Technology Forum.

"Mayor Garcia and leadership at the Port of Long Beach are to be recognized for the successful implementation of several emissions reduction programs that allowed them to exceed their air quality goals," Schaeffer said. "These major air quality improvements highlight how the integration of clean diesel trucks, cleaner fuel, electric shore power for ships, and other programs can result in significant reductions in emissions."



According to the port's 2014 emissions inventory, the majority of trucks that service the port's terminals – more than 91 percent – are diesel-fueled vehicles. Alternative fuel trucks, primarily those fueled by liquefied natural gas (LNG), made approximately 8.2 percent of the terminal calls in 2014, according to the Port's Clean Trucks Program (CTP) activity records and the Port Drayage Truck Registry (PDTR).

The port prohibits trucks older than Model Year (MY) 2007 from entering the complex and requires that trucks register with the port. There are a small number of pre-2007 trucks that get access on a one-time basis but have to pay a significant fee. According to the dray truck registry, about 60 percent of the 16,887 registered trucks entering the port are MY 2007-2009. The remainder are MY 2010 or newer.

"Because more than 95 percent of all heavy-duty trucks in the U.S. are diesel-powered, as are a majority of medium-duty trucks, the advancements in diesel technology can play a major role in producing immediate air quality improvements," Schaeffer said. "Over the last 10 years, emissions from heavy-duty diesel trucks, buses and other vehicles have been reduced by 99 percent for nitrogen oxides – an ozone precursor – and 98 percent for particulate emissions.

"Today it would take 60 trucks powered by a newer diesel engine to equal the same emissions from one truck manufactured in 1988.

"The Port of Long Beach remains the greenest Port in the world, reducing emissions while increasing economic activity," Long Beach Mayor Robert Garcia said in a press release from the Port. "The Port's consistent commitment to sustainability and our environment should be celebrated."

31. Mexico City Air Pollution Linked To Early Signs of Alzheimer's in Children

Children in Mexico City have developed some of the early markers for Alzheimer's in the brain's chemistry and structure due to the city's air pollution, American and Mexican researchers said. Pollution has contributed to changes in the hippocampus where learning and memory processing take place, said Dr. Lilian Calderón-Garcidueñas of the University of Montana, Missoula.

Mexico City has had a long-standing air pollution issue. Millions of children are involuntarily exposed to harmful concentrations of fine particulate matter (PM 2.5) every day since conception, Calderón-Garcidueñas said.

The seemingly healthy children who were studied have deficiencies in attention and short-term memory, and below-average scores in Verbal and Full Scale IQ tests compared to children

exposed to low air pollution, according to the research published in the Journal of Alzheimer's Disease and Parkinsonism.

"This is not one isolated change, but it is a cluster of findings pointing in the same direction," Calderón-Garcidueñas said.

While pollution is comprised of gases, such as ozone, particulate matter (PM 2.5) and organic compounds, weather also plays a role in its formation, AccuWeather Senior Meteorologist Jason Nicholls said.



In this Tuesday, Aug. 18, 2015, photo, old Volkswagen Beetle taxis sit at a junkyard in Mexico City. At its peak in 2006, the Volkswagen Beetles accounted for almost half of all taxis in Mexico City, with about 50,000 operating. The city stopped using the cars in 2012

because of emission requirements and safety concerns. (AP Photo/Sofia Jaramillo)

"Under strong areas of high pressure, air masses can become stagnant with no flow thus trapping pollution in valleys or under inversions," Nicholls said. "An inversion is a deviation in the lower atmosphere where temperatures rise with height from the surface to a few thousand feet. Temperatures normally cool with height; this is fairly common in the mid-latitudes."

Significant exposures to air pollutants also increase the Alzheimer's risk for people over 65 years old, according to separate research released earlier this year, Calderón-Garcidueñas said.

"The most important issue is the possibility of neuroprotection," she said. "The public should also know there is no money at all for air-pollution Alzheimer's disease-associated research at the most vulnerable stage of life: when the brain is in development."

"Since the most important sources of PM 2.5 are combustion sources [gasoline, oil, diesel, etc.], you wonder why this type of information is not available to the public, and of course why there is no interest in protecting the exposed population. We have millions of children living in polluted cities in the USA and it seems nobody cares," she added.

The latest findings build on more than a decade of research conducted by Calderón-Garcidueñas on the air pollution connections. Previously, Alzheimer-like precursors were found in dogs from Mexico City.

32. California's Ambitious Renewable Energy Bill Signed Into Law

Governor Jerry Brown has signed into law a bill requiring California to produce half its electricity from renewable sources by 2030, a goal he said was key to combating global climate change. "A decarbonized future is the reason we're here," Brown said at a signing ceremony in Los Angeles. "What we're doing here is very important, especially for low-income families."

The bill also requires a doubling of energy efficiency in buildings by 2030.

Environmentalists cheered the move even though language to cut petroleum use by 50 percent over 15 years was stripped from the bill after objections from the oil industry and some lawmakers. "I'm disappointed that we don't have the petroleum piece," bill author Senator Kevin de Leon said after the signing. "But two measures dealing with the energy efficiency and renewable energy are far-reaching and the most advanced in the world."

Environmentalists also expressed disappointment that the bill did not require a cut in gasoline and diesel use in the most-populous U.S. state.

"There's no question that increasing the amount of power California gets from renewable sources is good for our state," said Rebecca Claassen, Santa Barbara County organizer at Food & Water Watch. "But cutting emissions and increasing clean energy use only gets us part of the way," she said.

Ann Notthoff of the Natural Resources Defense Council called the oil industry's campaign against the provision "deplorable," but vowed to fight on. "Despite Big Oil's smokescreen, one thing is clear: California's leadership and communities across the state are more committed than ever to reduce our dependence on petroleum and eliminate its devastating impacts on the health and well-being of Californians," she said in a blog post.

Catherine Reheis-Boyd, president of the Western States Petroleum Association, said the oil industry will keep working with Brown and others on strategies to protect the environment and the economy. "We also take great pride in knowing that Californians consume the cleanest gasoline and diesel worldwide," she said.

A separate bill, which would have mandated an 80 percent reduction in greenhouse gas emissions by 2050 from 1990 levels, was also pulled near the end of the legislative session but is expected to be reintroduced next year.

In late September, the state's Air Resources Board readopted its controversial low carbon fuel standard program, requiring a 10 percent reduction in carbon intensity of transportation fuels burned in the state, a victory for environmentalists.

ASIA-PACIFIC

33. China Amends Air Pollution Law Plans Further Revisions in 2016

China has amended its main air pollution law to increase oversight of local governments and of heavily polluting coal-fired power plants, and to begin the process of regulating airborne emissions from marine vessels. The amendments to China's Air Pollution Control and Prevention Law, which the Standing Committee of the National People's Congress formally approved Aug. 31, will take effect Jan. 1, 2016.

China's central government has marked air pollution as the primary enemy in its “war on pollution,” giving it an even higher priority than its steps to clean the nation's water and soil pollution problems. It pushed through an action plan for better air quality in late 2013 and also made it a focus of the Environmental Protection Law that went into effect on January 1, 2015. A recent report linked air pollution in China to 4,000 deaths a day in the country.

Cai Shouqiu, a law professor at Wuhan University and former head of the Institute for Environmental Law who helped work on drafting parts of the law, said significant updates in the amendments include better control of local government management of air pollution; stronger oversight of coal-fired power; vehicle and marine vessel emissions; joint regional air pollution controls and early warning systems for heavy air pollution; pollutants emissions trading stipulations; and more specific legal liability and punishments.

The amendments will begin the process of eventually creating emissions control areas around port areas to curtail airborne emissions from marine vessels, which will likely be put into effect sometime during the next 13th Five-Year Plan (2016–2020). China's Ministry of Transport also released a more detailed action plan Aug. 31 on the prevention of pollution from ships, which dovetails with much of the language included in the amended air law, but also includes timelines and plans for steps such as using more liquefied natural gas and onshore power facilities.

The ministry stated that emissions control area implementation plans for both the Pearl River Delta area in south China and the Bohai Rim area near the port of Tianjin in northeast China should be released by the end of 2015, with step-by-step plans and pilot programs for forming those zones, with stringent airborne emissions control requirements imposed by the end of 2018 for those areas.

Freda Fung, a consultant with Natural Resources Defense Council in Hong Kong who has been following developments on controlling marine air pollution in China's ports, told reporters that the amended law “is a significant first step” for forming the legal basis on emissions control zones in China's ports and “requires that fuels used on ships while berthing must comply with requirements set for meeting air quality standards.” Fung also said there should be “concrete language” from the Ministry of Transport in the near future about fuel-switching at berth in future emissions control areas.

Key motor vehicle provisions in the new law⁵ include:

Chapter I General Provisions

Article 2 General principles of air pollution prevention shall include: the goal of improving atmospheric environmental air quality, the focus on controlling emissions at their sources with reasonable planning ahead, transforming economic development path, optimizing industrial structure and layout, and adjusting energy structures.

The law comprehensively addresses the prevention and control of air pollution from coal, industries, motor vehicles and vessels, fugitive dust, agriculture as well as other pollution sources; promotes joint regional air pollution prevention and control, co-efforts to reduce air pollutants including particulate matter, sulfur dioxide, nitrogen oxide, volatile organic

⁵ As translated by Hui He from The International Council On Clean Transportation

compounds, ammonia and greenhouse gases.

Chapter IV Air Pollution Prevention and Control Measures

Section 3 Prevention and control of air pollution from motor vehicles, vessels and other non-road mobile sources

Article 50 The state promotes low-carbon and environment-friendly travel, controls the number of motor vehicles based on city planning, develops urban public transport system and promotes public transportation.

The state promotes energy-saving and new-energy motor vehicles, vessels and non-road mobile machinery, restricts the development of highly polluting and energy consumptive motor vehicles, vessels and non-road mobile machinery, and reduces fossil fuel consumption through financial, taxation incentives and government procurement.

Provincial, municipal and local governments, if conditions permit in their governed regions, may implement the national motor vehicle emissions standards ahead of the national schedule. And if so, the relevant local governments should report to the environmental department of the State Council for recordkeeping.

Municipal governments shall strengthen and improve urban traffic management, optimize transportation planning, and ensure smooth traffic flow on pedestrian sidewalk and non-motor vehicle lanes.

Article 51 Pollutants emitted from motor vehicles, vessels and non-road mobile machinery shall not exceed stipulated emissions standards.

It is prohibited to produce, import or sell motor vehicles, vessels and non-road mobile machinery not complying with stipulated emissions standards.

Article 52 Manufacturers of motor vehicles and non-road mobile machinery shall conduct emissions testing of their newly produced motor vehicles and non-road mobile machinery for compliance. Only complied new vehicles and machines can be sold. The testing information should be published and open to the public.

The competent environmental protection agencies of provincial governments and above shall strengthen the supervision and inspection of emissions from newly produced and sold motor vehicles and non-road mobile machinery through on-site inspections, sample testing and other measures. Other governmental agencies such as quality supervision, industrial and commercial administrations shall support the environmental agencies in these efforts.

Article 53 In-use motor vehicles must be regularly inspected by motor vehicle emission testing institutions for exhaust emissions according to relevant national or local regulations. Only vehicles passing such in-use emissions inspections are to be permitted to operate on roads. For those failing to pass the test, the traffic administrative department of public security bureaus shall not issue them required safety technical inspection labels. The competent environmental protection administration of local governments at town level or above may supervise and conduct random emissions tests of in-use motor vehicles at parking lots or repair shops. Without interrupting the traffic, the relevant government agencies may use remote sensing and/or other technologies to randomly tests and supervise emissions from in-use motor vehicles. Relevant traffic administrative department of public security bureaus shall support.

Article 54 Motor vehicle emissions inspection institutions must be certified and use official

testing equipment to test emissions from motor vehicles, following test protocols set by the competent department of environmental protection administration under the State Council. Test results shall be shared with the competent environmental protection department online and in real-time. Motor vehicle emissions testing institutions and their legal representatives (managers) are responsible for the authenticity and accuracy of the test data.

The competent environmental protection departments, as well as certification and accreditation administration departments, shall supervise and inspect the emissions testing at testing facilities.

Article 55 Manufacturers and importers of motor vehicles shall release information on vehicle emissions testing results, emission control and repair technologies of their vehicles to the public.

Motor vehicle repair shops shall repair in-use motor vehicles according to air pollution prevention and control requirements and relevant national technological protocols, and make the vehicles meet required emissions standards. Competent transportation departments and environmental protection departments shall strengthen supervision and management according to the law.

Motor vehicle owners are prohibited to fraud the emissions tests, such as by temporarily changing exhaust pollution control devices of their motor vehicles to pass vehicle emission tests. Motor vehicle repair facilities are forbidden to provide such fraud repair services to motor vehicle owners. It is forbidden to damage vehicle on-board diagnostic systems.

Article 56 The competent department of environmental protection administration, together with other relevant departments of transportation, housing, urban-rural development, agriculture administration and water administration, shall supervise and inspect air pollutant emissions of non-road mobile machinery. If emissions exceed standards, the machinery shall not be used.

Article 57 The state promotes environment-friendly travels, and encourages drivers of vehicles burning fossil fuel to turn off their vehicle engines when idling for three or more minutes to reduce emissions.

Article 58 The state shall establish an environmental recall system for motor vehicles and non-road mobile machinery.

After informed by regulatory agencies of emissions noncompliance, manufacturers and importers of motor vehicles and non-road mobile machinery must recall their affected products if the noncompliance is proved to be design or production defects or if they fail the durability requirements in relevant emission standards. If the manufacturers or importers do not recall their affected products, the department of quality supervision under the State Council will collaborate with the competent department of environmental protection administration under the State Council to order the companies in question to recall.

Article 59 In-use heavy duty diesel vehicles and non-road mobile machinery without emissions control devices, or with inadequate devices that do not conform to relevant emissions requirements, shall install or replace with appropriate pollution control devices.

Article 60 In-use motor vehicles that do not comply with relevant emissions standards shall be repaired. Vehicles that still fail to meet emissions standards after repairing and applying appropriate emissions control technologies must be scrapped. Vehicle owners shall send or sell their vehicles to vehicle scrappage and recycling facilities, which shall record, dismantle, and destroy the vehicles according to relevant national requirements.

The state encourages and supports the early retirement of high-emission motor vehicles, vessels and non-road mobile machinery.

Article 61 City-level governments may, depending on local air quality, designate and declare areas where the use of highly polluting non-road mobile machinery is prohibited.

Article 62 Engines and emissions related equipment on vessels must be inspected by official vessel testing and inspection institutions. Only vessels that pass the test and conform to relevant emissions standards can be operated.

Article 63 Inland ships and sea-river vessels shall use general diesel fuels according to the national standards. After reaching ports, ocean-going vessels shall use marine fuel that meets pollutant control requirements.

Ports shall plan, design, and construct on on-shore power infrastructure at newly-built docks, and gradually upgrade existing docks with on-shore power infrastructure. Vessels shall use on-shore power upon reaching ports if the option is available.

Article 64 The competent transportation department of the State Council may designate atmospheric pollutant emissions control areas in coastal regions, and vessels traveling in the areas must meet relevant vessel emission standards.

Article 65 It is prohibited to produce, import and sell fuels for motor vehicles, vessels and non-road mobile machinery that fail to meet relevant standards; it is prohibited to sell general diesel fuel or other non-motor fuel to motor vehicle and motorcycle owners (for the fuel to be used on these vehicles); and it is prohibited to sell residual oil and heavy oil to non-road mobile machinery, inland ships and sea-river vessels.

Article 66 Hazardous substances in engine oil, nitrogen oxide reducing agents, additives for fuels, lubricants, other additives, and other specifications shall meet relevant standards. These substances shall not reduce the effectiveness and durability of pollution control devices on vehicles and vessels, nor increase emissions of any new ambient air quality pollutant.

Article 67 The state promotes pollution control of civil aircrafts and encourages effective measures to reduce air pollutant emissions during the design, production and use of civil aircrafts.

Chapter VII Legal Liabilities

Article 103 If any entity or individual commits any of the following acts in violation of the Law, the qualified supervision, industry and commerce administration departments of town-level local governments or above shall require the entity or individual to make corrections, confiscate raw materials, products and illegal income, and impose a fine on the entity or individual for more than one time but less than three times of the value of goods:

- (1) Selling coal and petroleum coke that cannot meet quality standards;
- (2) Producing or selling raw materials and products with VOC content that fail to meet quality standards or requirements;
- (3) Producing and selling fuel of motor vehicles, vessels and non-road mobile machines, engine oil, nitrogen oxide reducing agents, fuel and lubricant additives, and other additives that fail to meet quality standards;
- (4) Selling high pollution fuels in forbidden areas that prohibit the act of burning substances.

Article 104 If any entity or individual commits any of the following acts in violation of the Law, the entry-exit inspection and quarantine institutions shall require the entity or individual to make corrections, confiscate raw materials, products and illegal income, and fine the entity

or individual more than one time but less than three times of the value of goods; if the importing act can be defined as smuggling, the entity shall be punished by Customs:

- (1) Importing coals or petroleum coke that cannot meet quality standards;
- (2) Importing raw materials and products with VOC content that cannot meet quality standards or requirements;
- (3) Importing fuel oil used by motor vehicles, vessels and non-road mobile machines, engine oil, nitrogen oxides reducing agents, fuel and lubricant additives, and other additives that cannot meet quality standards.

Article 106 If any entity or individual, in violation of the Law, uses marine fuel oil that cannot meet quality standards, the maritime administration agency and the competent department of fisheries shall impose a fine on the entity or individual for more than RMB10,000 but less than RMB100,000.

Article 109 If any entity or individual, in violation of the Law, manufactures any vehicle or non-road mobile machinery that fails to meet pollutant emission standards, the competent environmental protection administration of local governments at or above province level shall require the entity or individual to make corrections, confiscate their illegal income, impose a fine on the violating entity or individual for more than one time but less than three times of the value of goods, and confiscate and destroy the noncompliant motor vehicles and non-road mobile machinery. If the above actions are denied by the manufacturer and the competent motor vehicles industry department of the State Council shall suspend the production of the affected vehicle models.

If manufacturers of motor vehicles and non-road mobile machinery, in violation of the Law, sell new vehicles or machines with low-quality or false emissions control devices that are different from those equipped on certified vehicle or engine models and cannot meet relevant emissions standards, the competent environmental protection administration of local governments at or above the province level shall require the suspension of the production plants for rectification, confiscate the companies' illegal income, impose a fine on the violating entities or individuals for more than one time but less than three times of the value of goods, and confiscate and destroy the noncompliant motor vehicles and non-road mobile machinery. The competent motor vehicles production department of the State Council shall suspend the production of motor vehicle and engine models in question.

Article 110 If any entity or individual, in violation of the Law, imports or sells any vehicle or non-road mobile machinery that fails to meet pollutant emission standards, the industrial and commercial administrative departments and the entry-exit inspection and quarantine institutions of the governments at or above the county level shall confiscate their illegal income, impose a fine on the violating entities or individuals for more than one time but less than three times of the value of related goods; and confiscate and destroy the noncompliant vehicle or non-road mobile machinery. If the importing act can be defined as smuggling, the entity shall be punished by Customs.

If any vehicle or non-road mobile machinery sold fails to meet pollutant emission standards, the seller shall be responsible for repairing, replacing or accepting the return of goods; if any losses are incurred to the consumer buying the vehicle, the seller shall compensate for the losses.

Article 111 If manufacturers or importers of motor vehicles, in violation of the Law, fail to release to the public information about their vehicles' emissions test or emissions control technologies, the competent environmental protection administration of local governments at

or above province level shall require the violating entities or individuals to make corrections and impose fines of more than RMB 50,000 but less than RMB 500,000.

If manufacturers or importers of motor vehicles, in violation of the Law, fail to release to the public relevant information about emissions repair and maintenance technologies, the competent environmental protection administration of local governments at or above the province level shall order the entity or individual to make corrections and impose fines of more than RMB 50,000 but less than RMB 500,000.

Article 112 If any vehicle testing and supervision institution, in violation of the Law, forge an emission test result or issue a fake emission test report for vehicles or any non-road mobile machinery, the competent environmental protection administration of local government at or above the county level shall confiscate illegal incomes and impose fines of more than RMB 100,000 but less than RMB 500,000; in serious cases, the department in charge of accreditation shall revoke the testing qualifications of the institution.

Entities that forge the emission test results or issue the fake emission test reports of vessels shall be punished by the maritime administrative department according to the Law.

If any entity uses fraudulent methods such as temporarily replacing vehicle exhaust pollution control devices to pass vehicle emission tests, or destroying motor vehicle emission on-board diagnostic systems, the competent environmental protection administration of local government at or above the county level shall fine the owner 5,000 RMB, and fine the vehicle maintenance entity RMB 5,000 per motor vehicle.

Article 113 Drivers who drive motor vehicles that fail to pass emission tests on the road in violation of the Law, shall be punished by the traffic administrative department of the public security organ according to the Law.

Article 114 If any entity or individual, in violation of the Law, uses non-road mobile machinery that fails to meet emission standards and requirements, or uses heavy diesel vehicle and non-road mobile machinery without installing and replacing pollution control devices, the competent environmental protection administration of local government at or above the county level shall order the entity to make corrections and impose fines of RMB 5,000.

Those who use high emission non-road mobile machinery in forbidden areas, shall be punished by the competent environmental protection administration of local government according to the Law.

34. Chinese Emissions of Two Key Pollutants Drop Slightly In First Half Of 2015

China's emissions of two key pollutants fell slightly in the first half of 2015, according to the environment ministry, as authorities stepped up punitive measures to combat environmental degradation. Emitted levels of sulfur dioxide and nitrogen oxide were down 4.6 percent and 8.8 percent, respectively, over the same period last year, the Ministry of Environmental Protection said in a statement on its website.

Chemical oxygen demand, a measure of water quality, showed a small drop of 2.9 percent, while ammonia nitrogen emissions were down 3.2 percent.

The percentage reductions were slightly higher than for the same period last year.

The ministry also said that it handled nearly 350 cases involving 282 million yuan (\$44.27 million) in fines for violations of environmental laws during the first seven months of the year, including 43 million yuan in Hebei province, which surrounds the capital Beijing.

It also reported over 1,300 cases where it limited or halted production, and almost 1,000 cases involving "administrative detention" which generally means holding somebody behind bars for up to 15 days. Under an amended environmental law that went into effect on January 1, 2015 firms are subject to unlimited fines as well as custodial sentences if they fail to abide by state rules on technological standards, resource use and waste treatment.

The environment ministry also has new powers to shut down non-compliant projects, and is taking steps to ensure pollution from industrial plants is monitored properly.

The ministry did not give emission levels of ozone or carbon monoxide, two other key pollutants. (See related story below.)

35. Ozone Main Air Pollutant in China in August

Ozone overtook PM2.5 to become the main air pollutant in 74 Chinese cities in August, according to a ranking released by the Ministry of Environmental Protection. More than 45 percent of August days in Beijing had pollution, with two days of heavy pollution, and the main pollutants were ozone and PM2.5, according to the monthly report, which reviews air quality in 74 cities.

Harder to detect than PM2.5, ozone has been linked to respiratory, eye and immune problems. Crops can also be affected by ozone.

According to the report, the main pollutants in 25 cities in the Yangtze River Delta region were ozone and PM 2.5 in August, while the major pollutants in nine cities in the Pearl River Delta region were ozone and sulfur dioxide. The two delta regions have high levels of economic development and encompass the cities of Shanghai in eastern China and Guangzhou in the south.

Seven cities in Beijing's neighboring province of Hebei, including Handan, Xingtai, Tangshan, Baoding, Hengshui, Langfang and Shijiazhuang, were among the ten most polluted, together with Zhengzhou in Henan Province, Jinan in Shandong Province, and the southwestern city of Chengdu.

The report also named ten cities with the best air quality, including Haikou in Hainan Province, Zhoushan in Zhejiang Province, Fuzhou in Fujian Province and Lhasa in Tibet.

36. China's New Grand Plan to Streamline Oversight of Its Embattled Environment

The mainland will consolidate environmental oversight as part of a master plan to overhaul the way it monitors its beleaguered natural resources, senior officials said in Beijing.

A full text of the master plan is yet to be released, but Yang Weimin, a deputy head of the Office of the Central Leading Group for Finance and Economic Affairs, said it would go beyond traditional thinking on environmental protection, and set up new mechanisms to better coordinate efforts to counter pollution, protect the environment and conserve resources.

The plan, which was developed under the office's lead, would "shake up the vested interests of different government agencies", conforming to President Xi Jinping's calls for "high-quality reform plans", Yang said.

Responsibility for protecting and managing the mainland's environmental resources is scattered among several government agencies, creating bureaucratic loopholes. Yang said such dispersed responsibilities would gradually be "unified and streamlined".

Management of agricultural and forestry land, for example, is now the responsibility of two departments but will be combined. But he also said any major government restructure was unlikely to take place before the next leadership transition.

Some experts have called for the creation of a mega-environmental ministry and a mega-natural resources management commission to unify functions now assumed by various government agencies, including those covering environmental protection, agriculture, forestry and water conservation. But such major changes could only take place, if ever, in 2018 when the next

Communist Party congress is held.



Is that a city in there? Shanghai is barely visible on a hazy day as the sun sets. Photo: Reuters

Yet the master plan would give the Ministry of Environmental Protection more power, allowing it to oversee provincial government implementation of environmental policies, even though they are at the same official ranking.

Zhai Qing, a deputy minister of environmental protection, said the central government had authorized the ministry to monitor and shame provincial party committees that overlooked green issues. It would also release publicly the results of that monitoring.

The National Audit Office and National Bureau of Statistics said it would start auditing officials on their environmental records and develop a balance sheet on natural resources. The hope is the moves would put more pressure on local officials to protect the environment and not just pursue economic growth.

37. China Electric Car Startup Seeks \$1 Billion in Tesla Challenge

A Chinese electric-car startup with ambitions to challenge Tesla Motors Inc. as of September 16th has raised about half the \$1 billion it is seeking, roping in investors including Sequoia Capital and Joy Capital as part of plans to develop affordable, connected green cars. NextEV Inc., set up last year by founder William Li and a group of Internet entrepreneurs, is backed by Tencent Holdings Ltd. and Hillhouse Capital.

The carmaker is targeting to roll out a supercar model in 2016 that can match the “Ludicrous” speed mode for Tesla's Model S and plans to outsource production to traditional auto manufacturers, Li said in a phone interview.

A number of startups have sprouted in China in the past year, backed by investors and Internet companies that see opportunities in the government's policies to promote electric cars and upgrade traditional manufacturing industries. “Talking big is pointless,” said Li, who is also chairman of car-pricing portal Bitauto Holdings Ltd. “We develop the car purely from the angle of consumers. We most value what they would like the car to be. We want them to experience sheer pleasure of driving our car.”

Besides the supercar, NextEV plans to offer mass-market models that will cost less than half the Tesla Model S, which starts from 620,000 yuan (\$97,000) in China. The goal is to offer Chinese consumers smart connected electric vehicles that they can afford, Li said.

“Most consumers go for electric cars for the free license. With more cities capping issuance of license plates, it will be the biggest motivation for motorists to buy electric vehicles,” said Yale Zhang, Shanghai-based managing director at Autoforesight Shanghai Co. “If NextEV can make their cars solid, better than Tesla in terms of manufacturing quality, they will find a big market here.”

NextEV was set up in Shanghai by Li and investors including Li Xiang, the founder of car-pricing website Autohome Inc., and JD.com Inc. The carmaker has hired former Maserati and Ford executive Martin Leach to head its operations and now has about 300 employees, mainly research and development staff, and offices in Silicon Valley, Munich, London, Beijing and Shanghai.

Both Sequoia Capital and Joy Capital cited the market potential for electric vehicles and the depth of the management team for their decisions to invest in NextEV.

The company plans to team up with two automakers by the end of this year to outsource manufacturing, Li said without providing details. NextEV will expand to overseas markets in the future, though China will remain its primary focus, he said.

“Chinese consumers are very picky, given that pretty much all the brands and models are available in this market,” Li said. “If we can win over Chinese consumers, it will be easier to attract motorists in other markets.”

38. China to Halve Purchase Tax for Small Vehicles to Boost Sales

To stimulate China's flagging auto industry, the central government will halve the purchase tax on light vehicles with engine displacement of 1.6 liters and smaller to 5 percent. The tax cut will be effective from Thursday, October 1st, through 2016, the government announced. The move will mainly benefit Japanese and domestic Chinese brands, which mostly produce small cars.

China's light-vehicle sales declined for the third consecutive month in August, dipping 3.4 percent year on year to 1.42 million vehicles, as the stagnating national economy continued to dampen market demand.

The last time Beijing cut the sales tax for small vehicles was in 2009, when an economic crisis ensnared much of the world. At the time, the government reduced the tax for vehicles with engine

sizes of 1.6 liters and smaller to 5 percent, down from 10 percent. Vehicle sales subsequently soared more than 50 percent in 2009.

In 2010, Beijing raised the sales tax for small vehicles up to 7.5 percent, and restored it to 10 percent the following year.

39. China Moves to Add E-Charging Stations for Electric Cars

China will require new residential complexes to include charging stations for electric cars, and mandate that more public parking spaces be reserved for plug-in and hybrid motor vehicles, the government announced September 25th. A forthcoming regulation on vehicle parking in urban areas will include regulations devoted to plug-in vehicle charging points in new residential complexes and public parking areas, and another will address inconsistencies in technical standards for charging such vehicles, officials announced at a press conference in Beijing.

Charging facilities will be required in all new residential complexes, and 10 percent of spaces on average must be devoted to plug-in and hybrid vehicles for all public street side and large building parking spaces, said Lu Kehua, deputy minister of the Housing and Urban Construction Department at the Ministry of Housing and Urban-Rural Development.

The government also will require on average one charging point for every 2,000 vehicles, Lu Kehua said.

Officials said they have approached domestic and international vehicle makers to assist with the policy revisions. "If you just have the infrastructure, but not the management of the entire operating system, this is not OK," said Zheng Zhajie, vice director of the National Energy Administration. "Getting the standards right is very important for the system and the thousands of households that are directly impacted."

Sales of alternative energy vehicles increased 270 percent in China during the first eight months of 2015 compared to the same period last year, driven in part by subsidies and tax incentives, according to a report from state-run Xinhua news agency.

Some cities, including Beijing and Shenzhen, are starting to grant car registration licenses more easily for alternative energy vehicle owners. Many cities have started restricting the number of registrations allowed due to traffic congestion and air pollution.

40. China Pushes Ahead With Electric Vehicles

China will forge ahead with promoting electric vehicles as part of its energy policy to reduce dependence on fossil fuels, and regulators are increasing scrutiny of diesel-fueled vehicles following Volkswagen AG's admission to cheating emissions rules. "The Chinese government has been paying attention to air pollution prevention given that it affects China's development and economic structural adjustments," Zheng Shanjie, vice administrator of China's National Energy Administration, told reporters in Beijing, in response to a question about Volkswagen and diesels. "China is now vigorously promoting development of electric vehicles, which is part of our measures on comprehensively addressing the issue."

Unlike Europe, where diesel is popular as an automotive fuel, most cars in China run on gasoline. The country has in recent years spent billions promoting the adoption of electric vehicles, doling out research grants and subsidies to automakers and battery suppliers to reduce air pollution in

its major cities and seize leadership in what it sees as the next mainstream automotive technology.

China has said it will target raising the proportion of non-fossil fuel energy use to total consumption to 15 percent by 2020, increasing further to 20 percent by 2030.

Local governments in major cities began restricting the use of diesel-powered passenger vehicles in the 1990s due to concerns that poor diesel quality would worsen pollution and rising demand for the fuel would undermine supply for trucks that haul goods around the country. As a result, the estimated sales of diesel-powered passenger vehicles were only 0.4 percent of total deliveries in China in the last 12 months through August, according to data compiled by Bloomberg Intelligence.

China's shunning of diesel cars could turn out to have been a blessing for Volkswagen, as it has shielded the company from direct backlash in its largest market. The Wolfsburg, Germany-based automaker has counted on the country for about 35 percent of vehicle sales this year and plans to raise local production capacity to 5 million autos by 2019, from 3.5 million in 2014.

VW's two joint ventures in China said on September 24th that they produced none of the vehicles involved in the widening scandal that cost former Chief Executive Officer Martin Winterkorn his job.

41. China's Nationwide Cap-and-Trade Follows Pilot Programs

China's announcement of a nationwide cap-and-trade emissions trading system and its other pledges in a joint statement on climate change at the White House indicate a willingness to take commitments to reducing carbon emissions to a new level and play a leading role on the global stage going into United Nations climate talks in Paris in December, experts following China's climate policies said.

While Chinese President Xi Jinping's announcement that China will launch a cap-and-trade emissions trading system (ETS) in 2017 is not entirely new, several other pieces revealed in the joint statement—including preferential policies for renewables to access China's national electricity grid and limiting financing from going to carbon-intensive projects at home and abroad—do signal further progress toward reaching a national goal to peak carbon emissions at or before 2030 and setting the stage for the December talks, said observers in China and around the world.

China launched seven pilot carbon trading platforms in a little more than two years, starting first in the South China city of Shenzhen in June 2013. It had previously stated it would trial the national system toward the end of 2016 with a goal to fully develop the China-wide ETS by 2020.

Drafting of the country's detailed National Carbon Trading Regulations is ongoing and a final version of the policy is expected to be released in the next few months.

China and the U.S. additionally agreed to work for enhanced transparency on carbon data, which the U.S. stated was “new progress” due to past issues related to commitments about differentiated disclosure of carbon emissions between developed and developing countries.

Other China pledges included having 50 percent of new buildings in urban areas meet green building standards from 2020, moving toward higher fuel efficiency standards for heavy-duty vehicles and accelerating efforts to control hydrofluorocarbons.

In mid-September, 11 Chinese cities and three provinces also pledged to have carbon peaks earlier than 2030 at a U.S.-China climate and low-carbon city summit in Los Angeles.

42. Transport Department Increases Emission Test Rates for Vehicles

After increasing the penalty for polluting vehicles a few months back, the transport department has now increased the emission test rates for vehicles. As per the new order issued by the government, the rates for bikes have gone up from `35 to `50; for autos from `50 to `60; petrol cars from `75 to `90 and diesel vehicles from `100 to `125.

Joint commissioner for transport (environment and e-governance), Maruti Sambrani, said revision of rates is done every five years. "Last year, owners of the emission testing centers had given a requisition stating that the cost involved in doing emission tests had gone up considerably all these years. The state government has made a reasonable increase in the rates for emission tests," he said.

An official from the department said, "As the department is carrying out more drives to impose penalty on polluting vehicles, there is an increasing demand for emission tests. Instead of paying `1,000 and `2,000 for repeat offences, it is better to pay `50 to `100 to get it done. In the city, there are more than 57 lakh registered vehicles; obviously, there is a good demand for emission tests."

A certificate issued by the testing center is valid for six months. 513 emission testing centers are functioning in state, out of which 303 are in the city. Emission testing centers have been told to recalibrate gas analyzers from time to time and display the date of recalibration

A few months back, the transport department increased the penalty for polluting from `300 to `1,000 for bikes and `600 to `1,000 for cars. In the present financial year alone, the department has imposed `39.46 lakh fines on vehicle owners for causing air pollution. A majority of the vehicles booked are diesel-run vehicles (4,974) and it is more than the double of petrol vehicles (1,467). A majority of cases have been booked in Jnanabharathi RTO (969); next comes KR Puram (882).

43. India's Monsoon Rains Seen Falling Short Of Previous Forecast

India's monsoon rains are likely to be below the prior forecast of 88 percent of the long-term average, the weather office chief said, which could make it the driest year since 2009 and worsen rural distress by cutting farm output.

The July-September rains irrigate nearly half of India's farmlands, bringing relief to millions of poor farmers who till small plots of land to sustain their families.

This would be the second straight year of drought- or drought-like conditions for only the fourth time in 115 years, which is another setback for Prime Minister Narendra Modi struggling to win over political opposition to pass reforms and unshackle Asia's third-largest economy.

"Overall monsoon rains will fall a notch or two below the 88 percent forecast that came out in June," India Meteorological Department's Laxman Singh Rathore told reporters.

The World Meteorological Organization said that the current El Nino weather phenomenon, which leads to dry weather in some parts of the world and causes floods in other, was expected to peak between October and January and could turn into one of the strongest on record.



Commuters use an umbrella to protect themselves from a heavy rain shower as they travel in a cycle rickshaw in Chandigarh, India, July 20, 2015. Photo: Ajay Verma

Rathore said the monsoon will start withdrawing from the western state of Rajasthan this weekend and farmers could be left with too little soil moisture to sow winter crops.

For rice grower Buddha Singh, whose crop is just starting to develop grains,

patchy rains over the past two weeks are threatening to damage his cultivation. "We need showers at short intervals, but that's not happening for the past 15-20 days," said Singh, a farmer in Delhi's neighboring state of Uttar Pradesh. "We'll lose a lot of money."

Though rainfall was scanty last year too, a late surge delayed the retreat by about 15 days and left enough moisture for farmers to start planting wheat and rapeseed from October.

The monsoon was 88 percent of the average in 2014 and cut grains output by 4.7 percent in the crop year to June 2015. Output could fall about 3 percent this year, said D.H. Pai Panandiker, president of non-profit organization RPG Foundation.

In 2009 which saw the worst drought in nearly three decades, rains were 22 percent below the average of 50 years since 1951. It had forced India to import large quantities of sugar. Weak rains this year could lead to imports of cooking oil, though India has sufficient stocks of wheat, rice and sugar.

44. Toyota Targets 90 Percent Emissions Cut on Fuel Cells

Toyota Motor Corp. said it is targeting a 90 percent reduction in emissions from its new vehicles by 2050 as it seeks to build on the success of its hybrid autos. The maker of the hydrogen-powered Mirai sedan said on October 14th that it aims to deliver more than 30,000 fuel-cell vehicles annually by 2020. The Prius seller also set a goal to reach more than 15 million cumulative deliveries of hybrids in the same span.

"The beautiful, diverse Earth is being lost at a speed where the pace of past innovations is not keeping up," Chairman Takeshi Uchiyamada, known as the father of the Prius, said at a forum in Tokyo. "In order to be there for the global environment, we believe it is important to take up new challenges with a vision for 20 and 30 years ahead."

With more than 8 million units sold in less than two decades, Toyota is by far the industry's top seller of hybrid vehicles, led by its Prius model. About 14 percent of the cars and trucks it sold worldwide in 2014 were hybrid or plug-in autos.

By the end of this year, Toyota will begin Japan sales of the Prius hybrid after its first redesign in almost seven years. The company also is due to begin deliveries in California this month of the Mirai fuel cell sedan, which uses hydrogen to power an on-board battery and emits only water.

Prius engineers said that they set out to match the performance of diesel engines, a choice of powertrain favored by Volkswagen until its recent scandal. The German automaker is now pivoting away from the technology and toward plug-in hybrids and electric vehicles. Before its diesel emissions cheating scheme was revealed, Volkswagen had said it planned to roll out 20 electric and plug-in hybrid cars by 2020. As of August, Toyota sold 30 hybrid passenger car models and one plug-in hybrid.

Toyota also is further along in its electrification strategy than General Motors Co., the world's third-biggest auto manufacturer. The maker of the Volt plug-in hybrid has targeted putting 500,000 vehicles on the road in the U.S. that are at least partially electric by 2017, from 180,834 last year. By contrast, U.S. deliveries of Prius hybrids passed the 500,000 mark in 2007, according to researcher Autodata Corp.

45. Toyota Targets Fuel-Cell Car Sales of 30,000 A Year By 2020

Toyota Motor Corp set what it called an ambitious target to sell 30,000 fuel-cell vehicles a year by the end of the decade under a plan to cut carbon emissions nearly to zero by 2050. Toyota, which is betting heavily on fuel-cell technology as carmakers rush to develop environmentally friendly vehicles, said it had so far sold 350 of its Mirai fuel-cell cars, launched in December. It retained a target of boosting production to about 2,000 next year and 3,000 in 2017.

Potentially the ultimate "green car", fuel-cell vehicles run on electricity generated by mixing hydrogen fuel and oxygen in the air, without the carbon emissions produced by gasoline-engine vehicles.

"When we first announced the Mirai, we said we were at the start of the age of hydrogen," senior managing officer Kiyotaka Ise told reporters. "The figure we've announced today is ambitious, but it needs to be to keep the ball rolling."

Hyundai Motor Co is also producing fuel-cell vehicles for the consumer market and Honda Motor Corp is widely expected to unveil its own offering later this month.

The Mirai target compares with the 1.5 million hybrid gasoline-electric vehicles Toyota aims to be selling annually by 2020, up from 1.26 million in 2014. Toyota said that cars running on conventional engines will have virtually disappeared by 2050.

Sales of the Mirai are limited to Japan but Toyota has been taking orders in the United States since August.

A global rollout has been delayed due to a dearth of hydrogen fuel stations outside Japan. Supply of the hand-assembled vehicles is also still very tight, with roughly three a day produced at a single plant in Toyota City, the company's sprawling headquarters in central Japan.

Toyota added that it aimed to eliminate carbon emissions from its production facilities by 2050 by using renewable and hydrogen-based energy.

46. BS-V Emission Norms for Vehicles Across India From 2019

India will implement the Bharat Stage-V, or BS-V, emission norms for vehicles across the country from 2019, the government said in a statement. This ends the debate around the oil ministry's push to directly progress from the current BS-IV to BS-VI norms to speed up the green initiative. (See Story below.)

"It has also been decided that BS-V fuel quality and emission norms will be implemented in the entire country from 2019 and BS-VI emission norms for four-wheelers shall be implemented from 2023," according to a statement uploaded on the oil ministry website.

Refiners were more or less in sync with the oil ministry's idea to upgrade directly to the BS-VI stage as the investments needed to upgrade to stage V or VI were similar and by first upgrading to V and then to VI would have meant additional cost. But carmakers were staunchly opposed to it, citing heavy investments in a shorter time frame. This is why the road transport and heavy industries ministries have been opposing skipping the stage-V norms.

47. India to Introduce Euro-VI Emission Norm for Fuels By 2020

India plans to shift to Euro-VI emission compliant petrol and diesel by 2020 to cut carbon pollution, Oil Minister Dharmendra Pradhan said recently. "We already have BS-III, equivalent to Euro-III specifications, across the country and BS-IV, in major cities which will shortly be extended to the entire country. A revised Auto Fuel Policy is in the offing which will lead to introduction of BS-VI fuels by 2020," he said.

Oil refineries will need to invest Rs 80,000 crore in upgrading petrol and diesel quality to meet cleaner fuel specifications by 2020.

Addressing a workshop on 'Carbon Emission Management', he said the fuels meeting Euro-IV or Bharat Stage (BS)-IV specifications are to be supplied throughout the country by April 2017 and BS-V or Euro-V grade fuel by April 1, 2020.

But now instead of stepwise upgradation from BS-IV to BS-V and then from BS-V to BS-VI, the government is planning to switch over directly from BS-IV to BS-VI auto fuels by April 1, 2020. BS-IV fuels contain 50 parts per million (ppm) sulfur, while BS-V and BS-VI grade fuel will have 10 ppm sulfur.

Oil refineries had previously upgraded technology and invested over Rs 55,000 crore for production and supply of BS-III/IV fuels. Another Rs 80,000 crore investment would be required for further upgradation.

He said the fuels meeting Euro-IV or Bharat Stage (BS)-IV specifications are to be supplied throughout the country by April 2017 and BS-V or Euro-V grade fuel by April 1, 2020.

Currently, BS-IV auto fuels are being supplied in whole of northern India covering J&K, Punjab, Haryana, Himachal Pradesh, Uttarakhand, Delhi, parts of Rajasthan and western UP. The rest of the country has BS-III grade fuel.

From April 1, 2016, all of Goa, Kerala, Karnataka, Telangana, Odisha, Union Territories of Daman and Diu, Dadra and Nagar Haveli and Andaman & Nicobar will get BS-IV fuel. The rest of the country will get supplies of BS-IV fuel from April 1, 2017.

48. Center Asks Volkswagen to Come Clear On Emission Test Software

Volkswagen India has been asked to come forward with more information on the number of cars sold in the country fitted with the software that throws forth varying results in test and actual conditions. Pune-based Automotive Research Association of India (ARAI) has revealed its finding to the ministry of heavy industries, which suggests that some cars might have been fitted with the same software. "The department of heavy industries, which had ordered the probe, has advised the German auto-maker to come forward and make an announcement," a senior government official told Times of India.

ARAI will submit its final report to the ministry in a couple of days.

Volkswagen on its part said in a statement that it would be able to clear the picture only by the end of November. "Since there is a complex combination of several brands, various models, different engine variants and gearboxes as well as different model years that need to be analyzed, establishing detailed facts is taking a longer time. Volkswagen Group India will present its results from the evaluations by the end of November 2015," the company said.

The company is expected to come forward with details like how many cars were fitted with the software in India, how it will rectify the problem and the timeline to rectify the same. "The next steps will depend on the findings from these evaluations," the company said.

ARAI seems to have found the vehicle emitting more than permissible emissions in its on-road testing cycles. "It is high time some disclosures are made in the case. The ministry is of the view that the company should come forward with relevant details," an official in know of the developments said.

The company had admitted earlier that some 11 million cars worldwide were fitted with the software, but is yet to reveal how many cars have been fitted with the same software in India.

A specific questionnaire to the company seeking further information on how many cars are affected, manufacturing year and the remedy thereof did not receive a clear response as the company's spokesperson said these details were still being "investigated". Nor did the company comment on what assurance it can give that yet-to-be-sold Volkswagen cars will not be fitted with the same software.

"Investigations are underway at the headquarters in Germany as well as in India to find out if cars sold with the EA 189 engines are impacted due to the software or not, in the Indian context. Volkswagen India is waiting for results...will communicate further after the results are out," a Volkswagen India spokesperson said.

In an earlier reply to a query on what make of cars sold in India were fitted with the EA 189 software, Volkswagen India said, "Volkswagen has sold in India the Polo, Vento, Jetta and Passat with different EA 189 engines (1.2-litre, 1.5-litre, 1.6-litre and 2.0-litre diesel engines) between 2008 and till now. Further, we cannot comment on the numbers at the moment."

49. General Motors India Makes Big Changes at Senior Management Level

General Motors India announced senior management changes with its long-serving Vice President of Corporate Affairs P Balendran moving into an advisory role while appointing two new vice-presidents for the role of communications and government relations. The company said Swati Bhattacharya has been appointed as Vice President of Communications and Pankaj Gupta as Vice President of Government Relations and Public Policy. Both appointments are effective September 10, 2015.

Balendran, who has served as GM India Vice President of Corporate Affairs since joining GM India in 1998, will take on the new position of senior advisor to the company, effective October 31, 2015, the company said in a statement. When contacted, Balendran, who played a key role in handling several crises faced by the company, including the recall of 1.14 lakh units of Tavera in 2013 over emission specifications, said: "I will be moving into a new role."

GM India said Bhattacharya would be responsible for the company's communications strategy, including the rebuilding of "the reputation of the Chevrolet brand and partnering with GM India Marketing to grow brand awareness". Bhattacharya joins GM India from Ingersoll Rand India, where she had served as Vice-President of Corporate Relations, Public Affairs and Branding.

Pankaj Gupta, who would be responsible for working with central and state government officials as well as with industry bodies on policies, comes from Volkswagen India.

"When we recently announced a new USD 1 billion investment strategy for the Indian market, we highlighted that new people will join General Motors to help us as we grow in India," General Motors India, President and Managing Director, Arvind Saxena, said.

In July, General Motors CEO Mary Barra had announced that it would close its first plant at Halol in Gujarat to consolidate operations.

50. New Study Uncovers the Underlying Causes of Delhi's Air Pollution Problems

A team of researchers led by the University of Surrey assessed how Delhi's landscape, weather, energy consumption culture, and growing urban population combines to elevate concentrations of air pollutants, including ultrafine particles, the most harmful to human health. "Air pollution has been placed in the top ten health risks faced by human beings globally. Delhi has the dubious accolade of being regularly cited as the most polluted city in the world, with air pollution causing thousands of excess deaths in a year in this growing megacity, explained Dr Prashant Kumar of the University of Surrey.

" Whilst it might be easy to blame this on increased use of vehicles, industrial production or a growing population, the truth is that Delhi is a toxic pollutant punchbowl with myriad ingredients, all which need addressing in the round."

Delhi is one of the largest population centers in the world. Classed as the world's fifth 'megacity', it has a population of 25.8 million, which continues to grow. With this growth, our research predicted that the number of road vehicles will increase from 4.7 million in 2010 to nearly 26 million by 2030. Total energy consumption in Delhi has risen 57% from 2001 to 2011.

As a landlocked megacity Delhi has limited avenues for flushing polluted air out of the city. Coastal megacities such as Mumbai have at least a chance to 'replace' polluted air with relatively

unpolluted sea breezes, whereas Delhi's surrounding regions are sometimes even more polluted than the city. For example, most of the brick kilns used for making bricks are not located in the city, but in predominantly upwind surrounding industrial areas.

These outside pollutants can be attributed to use of low-quality fuels such as raw wood, agricultural and plastic waste in industrial settings, cow dung for cooking stoves and widespread use of diesel generators due to unreliable infrastructure. These sources release fine particle pollutants, the most dangerous to human health.

In Delhi fine particle pollution rates are ten times higher than that of Chennai, which has ten times more cars but is coastally located, without the surrounding industrial areas.

Coupled with Delhi's densely packed architecture, and varying building heights the 'breathability' of the city is inhibited by its weather conditions. The city's decreasing temperature (attributed to the effects of pollution) draws outside polluted air into the city center, whilst windy, dusty conditions during summer exacerbate this problem.

"The picture of Delhi's pollution problem is complicated and is aggravated by some factors that are out of human control," continued Dr Kumar. "However, in this growing city it is important that the population is protected in whatever ways they can be from health-endangering pollutants. Simple remedies such as 'greening' unpaved roadside areas through a natural or artificial grass canopy could possibly help in limiting coarse dust particles during dry and windy seasons. Natural measures, such as the development of wetlands and trees are also effective."

"There is also a cultural context here. Even the best science and technology will not succeed in reducing emissions and improving air quality if it is not considered in a broader framework of economic development of the country, rising awareness of public health risks and a change in attitudes and regulation towards poor quality fuels. It is a complicated, pick-and-mix of problems that will prove difficult to combat without innovative, encompassing and quick action."

51. Choking Delhi Vows Pollution Tax, Car-Free Days to Improve Air

India's polluted capital, New Delhi, will within two months impose a tax on commercial vehicles entering the city and prohibit the use of cars on certain busy routes once every month, its transport minister has announced. High pollution levels have worried environmentalists, public and the authorities in the city of 16 million people, which the World Health Organization last year said had the worst air quality in the world. India rejected the report's findings.

Initiatives to clean up Delhi's air have hit roadblocks in the past. A directive this year to ban all vehicles older than 15 years has been delayed and previous city governments have often ignored court orders to address pollution woes.

"Delhi's pollution levels are rising beyond dangerous levels," state Transport Minister Gopal Rai told reporters in an interview. "If we don't address this, people will be forced to think about leaving the city to save their lives." Rai said his government will within two months impose a surcharge of up to 1,300 rupees (\$20) on diesel-fueled trucks that enter the city. For a longer-term solution, authorities are trying to build a peripheral road to divert traffic.

About 52,000 such vehicles enter the landlocked city each day, more than double government estimates, the Centre for Science and Environment (CSE) said in a new report. Such vehicles account for about a third of the city's pollution.

India's top court recently gave Rai's government three days to devise a plan to address alarming levels of pollution caused specifically by commercial trucks. There have been several similar court orders in the last 15 years.

CSE's executive director, Anumita Roychowdhury, welcomed Rai's decision to levy a pollution tax, but said effective implementation was key. "Implementation has to be really effective to act as a deterrent. The track record to deal with truck pollution has been bad," Roychowdhury said.

Among other initiatives, starting October 22nd, Delhi will enforce a car-free day on certain routes once a month. Rai has also urged citizens to adopt a one-car-one-family policy and increase use of bicycles.

The government is also evaluating a proposal to introduce staggered office hours to decongest traffic in the city, where jams run into several hours at peak travel time.

52. China Warns Of Severe Winter Smog, Worsened By El Nino

China could face another bout of severe air pollution this winter with unfavorable weather expected to aggravate the problem, the environment ministry said. Smog has emerged as a major problem for the government, which has relied on coal and highly polluting heavy industries to fuel its economic growth, especially in northern regions.

The Ministry of Environmental Protection said the El Nino phenomenon meant that wind and rain were likely to be unusually low, and so emissions produced by coal-fired urban heating systems would not be easily dispersed.

At an emergency meeting to discuss measures aimed at limiting pollution this cold season, the ministry urged heating providers to use high-quality coal and to make sure that mandatory boiler renovations have been done before winter heating begins.

The ministry will step up inspections of construction sites and try to reduce the use of fireworks, and has also made provisions to allow big polluting industries like steel and cement to work different shifts in order to reduce smog build-ups, it said on its website.

The ministry said heating demand meant that concentrations of small and breathable airborne particles known as PM2.5 reached an average of 111 micrograms per cubic meter last winter in the smog-prone region of Beijing, Hebei and Tianjin, higher than the yearly average of 88.

China launched a "war on pollution" in 2014 and promised to shut polluting industries and cut the use of coal in industrial regions around Beijing, Shanghai and the Pearl River delta near Hong Kong.

53. South Korea's Lee to Head U.N. Panel of Climate Scientists

South Korea's Hoesung Lee, chosen to head the U.N.'s panel of climate scientists, favors wider pricing of carbon dioxide output to curb emissions of the greenhouse gases the group blames for global warming. He told reporters he would seek to open the Nobel Peace Prize winning Intergovernmental Panel on Climate Change (IPCC), traditionally led by scientists from Europe and North America, to experts from around the world.

He added the IPCC would also strive to include more women scientists in its work, make its science better known and narrowing down uncertainties about the future pace of global warming.

Government representatives meeting in Dubrovnik, Croatia, picked the professor of the economics of climate change to succeed India's Rajendra Pachauri as chair of the IPCC, whose findings are the main guide for combating global warming. Lee, 69, beat five rivals for the job, including Belgium's Jean-Pascal van Ypersele by 78-56 votes in a run-off. He will be chair for 6-8 years to oversee a mammoth report about global warming.

The last IPCC reports in 2013-14 concluded it is 95 percent probable that human activities, led by the burning of fossil fuels, are the main cause of warming since 1950. Warming meant risks of "severe, pervasive and irreversible impacts," it said.

Lee, until now a vice-chair of the IPCC, will be the U.N.'s top climate scientist when almost 200 nations meet in Paris from November 30th to December 11, seeking to agree on a new global deal to slow climate change.

SOUTH AMERICA

54. Brazil Cut HCFC Use 16 Percent Over Six Years

Brazil cut its consumption of hydrochlorofluorocarbons (HCFCs) and other ozone-depleting substances by more than 16 percent since 2009–2010, well above the Montreal Protocol target for developing countries, the Environment Ministry announced on September 16th. The government pointed to \$19.5 million from the Multilateral Fund, given to local foam makers to replace HCFCs used as a foam expansion agent with non-ozone-depleting alternatives, like cyclopentene and other hydrocarbonates, said Magna Luduvic, the Environment Ministry's manager of ozone layer protection. In Brazil, foam is widely used to make mattresses, pillows, sofa and chair cushions, as well as car seats, dashboards and panels. The country's new target is by 2020 to reduce consumption of HCFCs and other substances by 40 percent. It is seeking \$40 million more from the Multilateral Fund, established in 1991 to assist developing countries meet their Montreal Protocol commitments, Luduvic told reporters. Under the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, HCFC production is prohibited after 2020 in developed countries and 2030 in developing countries. Brazil stopped producing HCFCs many years ago, but still imports the substance, which also emits significant amounts of greenhouse gases.

55. Brazil Takes Step to Build Electric, Hybrid Car Market

Brazil's recent decision to eliminate import tariffs on all-electric cars and to slash import tariffs on all gasoline-electric hybrids is the first step in creating an electric-hybrid car market, still seen as a long-term development, automotive-sector consultants told reporters.

On October 26th Brazil's Foreign Trade Chamber (Camex), the country's foreign trade policy making body, issued a resolution (No. 97), which took effect on October 27th, that eliminated the 35 percent import tariff on electric cars, those that are 100 percent powered by electric motors and whose energy is stored in rechargeable batteries. The resolution also slashed import tariffs on all types of hybrids from 35 percent to a high of 7 percent.

The tax reduction for hybrids covers both plug-in and non-plug-in varieties.

The import tariff elimination and reduction also applies to all electric and hybrid knock-down assembly kits, classified as non-value-added vehicles. Already-assembled cars are valued-added vehicles.

“The Camex resolution will increase electric and hybrid car imports and encourage the makers of these cars to build assembly plants here, provided there is sufficient demand,” Julian Semple, a consultant with Carcon Automotive, a Sao-Paulo-based automotive consulting firm, told reporters. “But because the price of such cars is high and because charging stations for plug-in hybrids only exist in a few of the largest cities, a robust electric and hybrid car market is still a long way off.”

In the first nine months of 2015, 664 electric and hybrid cars were newly registered in Brazil, compared to 855 electric and hybrid cars newly registered in 2014, according to Anfavea, the national vehicle manufacturers association. That is a small fraction of the nearly 3 million cars, nearly all flex-fuel vehicles, registered here last year.

Most of the close to 1,000 electric and hybrid cars Brazil now annually imports are Ford Fusion hybrids, shipped here from Mexico, and Toyota Prius hybrids, shipped from Japan, said Semple.

A certain quota of cars, shipped from Mexico, including the Ford Fusion Hybrid, can enter Brazil duty-free because of a trade deal between Mexico and the Mercosur, the Southern Cone common market, composed of Brazil, Argentina, Paraguay, Uruguay and Venezuela.

The Fusion Hybrid retails in Brazil for the equivalent of \$35,822 and the Prius sells for around \$30,300. Much higher-priced imported hybrids include the S400 Mercedes-Benz, at \$165,000, and the Porsche Cayenne, \$109,000. The average-priced new model car in Brazil sells for around \$11,528.

GENERAL

56. Outdoor Air Pollution Kills 3 Million Globally, Study Says

Outdoor air pollution contributed to 3.3 million deaths worldwide in 2010, with wood-burning stoves in China and India and ammonia-belching farms in the West among the biggest culprits, according to a new study. And if nothing is done, the annual toll from dirty air could double to 6.6 million premature deaths by 2050, with the biggest rise coming in Asia, researchers said on September 16th in the journal *Nature*. The study used new atmospheric models and emissions data to offer a more comprehensive view of pollution sources and how the effects vary across the globe.

“If the projected increase in mortality attributable to air pollution is to be avoided, intensive air quality control measures will be needed, particularly in South and East Asia,” wrote the researchers, led by Jos Lelieveld of Germany's Max Plank Institute for Chemistry.

About a third of the deaths were caused by pollution from burning wood, diesel and other sooty fuels at homes and businesses, predominantly in Asia, according to the study. Agricultural operations were the second-biggest cause and a major pollution source in the Eastern U.S., Europe, Russia and Japan, accounting for a fifth of deaths. More than 70 percent of the deaths were in Southeast Asia and the Western Pacific, the scientists said.

Ammonia from fertilizers and animals drifts into cities and is a key ingredient in producing ozone and microscopic pollutants known as fine particulates that damage the heart and lungs, Lelieveld

said in a conference call with reporters. Emissions from power plants, factories, vehicles and burning biomass accounted for almost a third of the deaths, the researchers found.

The impact of agriculture was "quite surprising" and shows how pollution must be viewed as a regional problem, Lelieveld said. "Much of the agricultural emissions that are being inhaled in a city like London are actually originating from outside the city."

57. This Year's El Nino Weather Pattern Could Be Strongest On Record: Experts

The current El Nino weather phenomenon is expected to peak between October and January and could turn into one of the strongest on record, experts from the World Meteorological Organization said at a recent news conference. Climate models and experts suggest surface waters in the east-central Pacific Ocean are likely to be more than 2 degrees hotter than average, potentially making this El Nino one of the strongest ever.

Typically, the warm air above the eastern Pacific is causing increased precipitation over the west coast of South America and dry conditions over the Australia/Indonesia archipelago and the Southeast Asia region, said Maxx Dilley, director of the WMO's Climate Prediction and Adaptation Branch.

El Nino can also bring higher rainfall and sometimes flooding to the Horn of Africa, but causes drier conditions in southern Africa, Dilley said.

Climate scientists are better prepared than ever with prediction models and data on El Nino patterns, but the impact of this El Nino in the northern hemisphere is hard to forecast because there is also an Arctic warming effect at work on the Atlantic jetstream current. "The truth is we don't know what will happen. Will the two patterns reinforce each other? Will they cancel each other? Are they going to act in sequence? Are they going to be regional? We really don't know," said David Carlson, the director of the World Climate Research Program.

This El Nino could also be followed abruptly by a cooling La Nina, which, along with the advance of global warming, was adding to the uncertainty, Carlson said. "I think we all think that there's some climate warming signals starting to show up in the El Nino record," he said. But he added that it is still unclear how global warming is affected the frequency or magnitude of El Nino events.

Since 1950, strong El Nino events occurred in 1972-3, 1982-3 and 1997-8.

58. Global Sea Levels Climbed 3 Inches Since 1992, NASA Research Shows

Sea levels worldwide rose an average of nearly 3 inches (8 cm) since 1992, the result of warming waters and melting ice, according to a panel of NASA scientists.

In 2013, a United Nations panel predicted sea levels would rise from 1 to 3 feet (0.3 to 0.9 meters) by the end of the century. The new research shows that sea level rise most likely will be at the high end of that range, said University of Colorado geophysicist Steve Nerem.

Sea levels are rising faster than they did 50 years ago and "it's very likely to get worse in the future," Nerem said.

The changes are not uniform. Some areas showed sea levels rising more than 9 inches (25 cm) and other regions, such as along the U.S. West Coast, actually falling, according to an analysis

of 23 years of satellite data. Scientists believe ocean currents and natural cycles are temporarily offsetting a sea level rise in the Pacific and the U.S. West Coast could see a significant hike in sea levels in the next 20 years.

"People need to understand that the planet is not only changing, it's changed," NASA scientist Tom Wagner told reporters on a conference call. "If you're going to put in major infrastructure like a water treatment plant or a power plant in a coastal zone ... we have data you can now use to estimate what the impacts are going to be in the next 100 years," Wagner said.

Low-lying regions, such as Florida, are especially vulnerable, added Michael Freilich, director of NASA's Earth Science Division. "Even today, normal spring high tides cause street flooding in sections of Miami, something that didn't happen regularly just a few decades ago," Feilich said.



More than 150 million people, mostly in Asia, live within 3 feet (1 meter) of the sea, he added.

Tourists make their way across Carrick-a-Rede Rope Bridge on the Causeway coast, north of Belfast April 8, 2015.

Photo: CATHAL MCNAUGHTON

The biggest uncertainty in forecasting sea level rise is determining how quickly the polar ice sheets will melt in response to warming

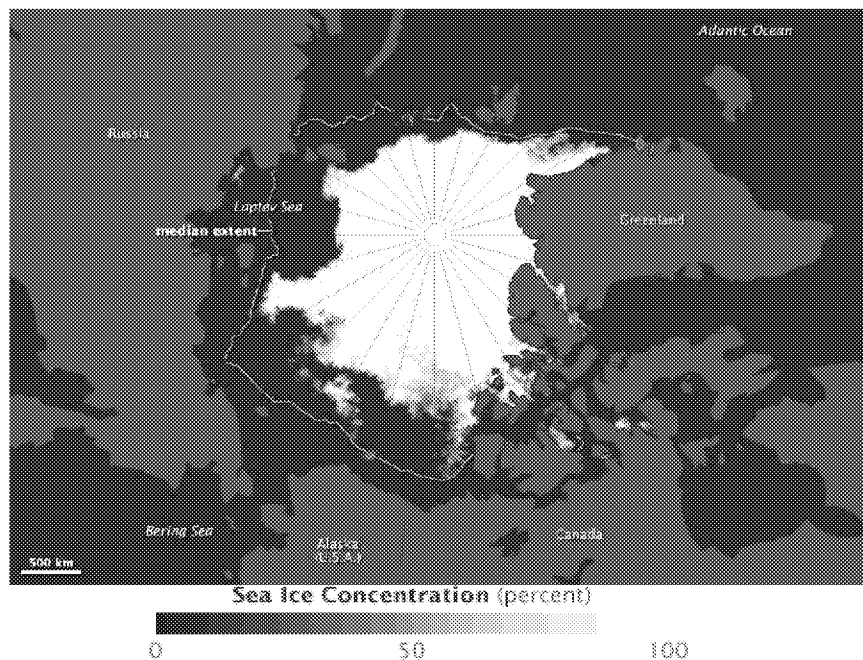
temperatures. "Significant changes are taking place today on ice sheets," said Eric Rignot, a glaciologist at the University of California in Irvine. "It would take centuries to reverse the trend of ice retreat."

Scientists said about one-third of the rise in sea levels is due to the expansion of warmer ocean water, one-third to ice loss from the polar ice sheets and the remaining third to melting mountain glaciers.

59. Arctic Sea Ice Appears To Have Reached Its Annual Minimum.

According to a preliminary analysis of satellite data by scientists at NASA and the National Snow and Ice Data Center (NSIDC), sea ice extent shrank to 4.41 million square kilometers (1.70 million square miles) on September 11, 2015. The year will rank as the fourth lowest ice coverage since space-based observations began in 1978.

"We haven't seen any major weather event or persistent weather pattern in the Arctic this summer that helped push the extent lower, as often happens," said Walt Meier, a sea ice scientist with NASA's Goddard Space Flight Center. "It was a bit warmer in some areas than last year, but it was cooler in other places, too."



The map above shows Arctic sea ice extent on September 11, 2015. Extent is defined as the total area in which the ice concentration is at least 15 percent. The yellow outline on the map shows the median sea ice extent observed in September from 1981 through 2010. The map was compiled from observations by the Advanced Microwave Scanning Radiometer 2 (AMSR-2) sensor on the Global Change Observation Mission 1st-Water (“Shizuku”) satellite, which is operated by the Japan Aerospace Exploration Agency (JAXA).

This year’s minimum is 1.81 million square kilometers (699,000 square miles) lower than the 1981-2010 average. Sea ice cover melted at a relatively slow rate in June, the month when the Arctic receives the most solar energy. However, the rate of ice loss accelerated in July, and faster than normal loss rates continued through August, a transition month when ice losses typically begins to slow. A big “hole” appeared in the ice pack in the Beaufort and Chukchi seas in August. The huge opening allowed the ocean to absorb more solar energy, accelerating the melting process. While weather conditions in September could change the minimum extent number or date, it is unlikely that the ranking as the fourth lowest year on record will change when final numbers have been tallied.

“Arctic ice cover becomes less and less resilient and it doesn’t take as much to melt it as it used to,” Meier said. The sea ice cap, which used to be a solid sheet of ice, is now fragmented into smaller floes that are exposed to warm water on more sides. “In the past, Arctic sea ice was like a fortress. The ocean could only attack it from the sides. Now it’s like the invaders have tunneled in from underneath and the ice pack melts from within.”

The sea ice cap grows and shrinks cyclically with the seasons. Its minimum summertime extent, which occurs at the end of the melt season, has been decreasing since the late 1970s in response to warming temperatures. Since 1996, the sea ice decline has accelerated. The ten lowest minimum extents in the satellite record have occurred in the past eleven years.

60. UN Secretary-General Praises Montreal Protocol

Not so long ago, humanity stood on the brink of a self-inflicted catastrophe. Our use of ozone-depleting substances such as chlorofluorocarbons (CFCs) had torn a hole in the ozone layer that protects us from the sun's harmful ultraviolet radiation.

But we tackled this challenge. Thirty years ago, the international community signed the Vienna Convention for the Protection of the Ozone Layer. Under its Montreal Protocol, the world united to slash the production and consumption of CFCs and other ozone-depleting substances.

Together, we have succeeded in putting the stratospheric ozone layer on the road to recovery by the middle of this century. As a result, up to 2 million cases of skin cancer may be prevented each year, along with even more avoided cases of eye cataracts.

As we look forward to the adoption of the 2030 Agenda for Sustainable Development, and the effort by governments later this year in Paris to forge a new, collective path forward on climate change, the Montreal Protocol's success should inspire us. It shows what we are capable of when nations act together on a global challenge.

But the work of the Montreal Protocol is not yet done. Hydrofluorocarbons (HFCs) have been used as replacements for many ozone-depleting substances. While they do not deplete the ozone layer, they are extremely potent greenhouse gases and will contribute a great deal of warming to our already overheated planet in the coming decades unless we act now.

Many countries are now considering using the Montreal Protocol regime to phase down HFCs. A political commitment to managing HFCs under the Montreal Protocol could be one of the biggest climate change wins in the lead-up to the Paris climate conference. It will also be another strong victory for multilateral efforts to safeguard our environment. On this International Day, let us ensure that we protect our climate the way we have preserved the ozone layer.

61. Shell Abandons Alaska Arctic Drilling

Shell recently provided an update on the Burger J exploration well, located in Alaska's Chukchi Sea. The Burger J well is approximately 150 miles from Barrow, Alaska, in about 150 feet of water. Shell safely drilled the well to a total depth of 6800 feet this summer in a basin that demonstrates many of the key attributes of a major petroleum basin. For an area equivalent to half the size of the Gulf of Mexico, this basin remains substantially under-explored.

Shell has found indications of oil and gas in the Burger J well, but these are not sufficient to warrant further exploration in the Burger prospect. The well will be sealed and abandoned in accordance with U.S. regulations.

Shell will now cease further exploration activity in offshore Alaska for the foreseeable future. This decision reflects both the Burger J well result, the high costs associated with the project, and the challenging and unpredictable federal regulatory environment in offshore Alaska.

The company expects to take financial charges as a result of this announcement. The balance sheet carrying value of Shell's Alaska position is approximately \$3.0 billion, with approximately a further \$1.1 billion of future contractual commitments. An update will be provided with the third quarter 2015 results.

62. Global Group Formed to Advance Zero-Emissions Vehicles

California and six other states have joined an international group to advance the use of zero-emission vehicles around the globe. The International ZEV Alliance will set ambitious targets to advance the deployment of zero-emission vehicles, share data and collaborate on best practices, the California Environmental Protection Agency said in a written statement.

Formed in August, the organization held a signing event in New York on September 29th to announce the founding members, who along with California include: the Netherlands, Norway, U.K., Quebec, Connecticut, Maryland, Massachusetts, Oregon, Rhode Island and Vermont. Together, the founding members account for more than a third of global vehicle sales, Cal-EPA said. The seven states are part of a multistate task force established in 2013 working to put 3.3 million zero emission vehicles on U.S. roads by 2025.

“Limiting the impact of climate change is only possible if we transition to cleaner, more energy efficient vehicles,” Cal-EPA Secretary Matthew Rodriquez said in a written statement. “We’re very pleased to be joining with many of the leaders in this growing market, and we look forward to working with them to put more drivers at the wheel of zero-emission vehicles.”

Separately, the International Council on Clean Transportation (ICCT) released a report that features the progress, so far, in advancing the use of zero-emission vehicles and outlines policies, such as consumer incentives and investment in infrastructure that can accelerate the transition to electric cars.

“Developing the new zero-emission vehicle market will require global scale, in the tens of millions of vehicles, to achieve lower cost and long-term success,” the report said. “International collaboration will be a critical step toward greater market volume and a long-term market transformation.”

The ICCT will act as the secretariat to the International ZEV Alliance.

In a written statement, ICCT Director Nic Lutsey said the founding members “have been crucial to the early adoption of electrical vehicles.” Lutsey is author of the ICCT report, “Transition to a Global Zero-Emission Vehicle Fleet: A Collaborative Agenda for Governments.”

The ICCT estimates there are 1 million plug-in electric vehicles on the world's roads, a milestone reached in only six years.

63. OECD Body Backs Paris Shipping CO2 Action

OECD researchers have weighed into the controversy surrounding shipping’s status in the Paris climate deal by calling for the December agreement to establish a \$25 per ton carbon tax on the sector. This could raise \$26bn (€22.7bn) for the Green Climate Fund while only marginally raising maritime transport costs, the OECD’s International Transport Forum (ITF) said.

The researchers, who do not represent the individual views of the forum’s 57 member states, also called for an emissions cap on shipping, which currently accounts for around 2% of global emissions.

The International Maritime Organization (IMO) secretary general warned countries last month against setting such a cap in Paris in December. The UN’s shipping body should be left to lead

work on tackling the sector's climate impact, the secretary general argued. Provisions on reducing emissions from international shipping and aviation emissions have since been removed from the latest draft of the Paris agreement, in a move criticized by NGOs.

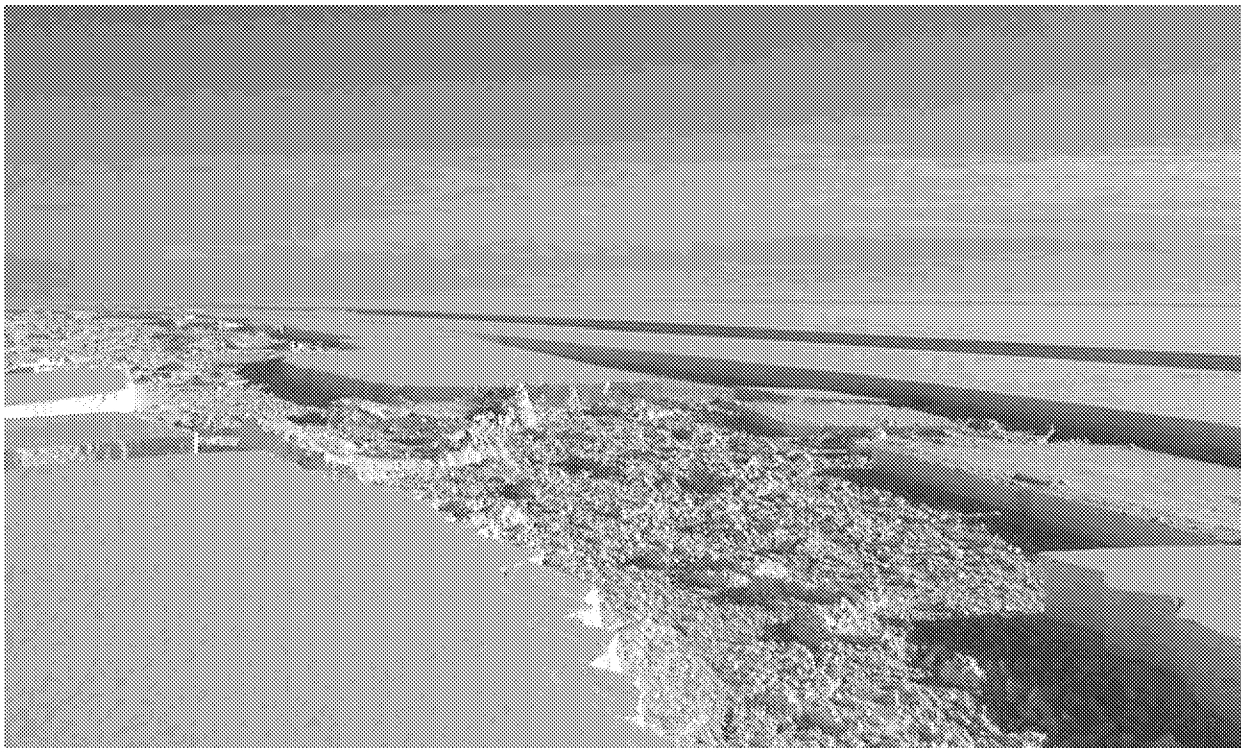
The ITF suggested that the Paris deal request that the IMO submit annual action plans and progress reports to the UN Climate Convention (UNFCCC) on measures to achieve an emissions target.

The International Chamber of Shipping (ICS) strongly criticized the ITF's proposals and the research underpinning them. "While shipping may currently have CO2 emissions comparable to a major OECD economy, it is inappropriate for the ITF to propose that the industry should be treated like an OECD economy," said ICS secretary general Peter Hinchliffe.

The \$25/t CO2 tax proposed by ITF would be almost three times higher than the carbon price paid by shore-based industries in developed countries, ICS said. Around 70% of the world merchant fleet is registered in developing countries - non-Annex I states under the UNFCCC.

ICS said it would prefer a fuel levy than a complex emissions trading system. Such a levy "should be proportionate to international shipping's share of the world's total CO2 emissions...not the \$26bn a year suggested by the ITF".

64. Antarctic Ice Sheets Face Catastrophic Collapse Without Deep Emissions Cuts



A team of researchers has found that steep cuts to emissions during the next decade are the only way to avoid a catastrophic collapse of Antarctic ice sheets and associated sea-level rise that will continue for thousands of years. The study, published in the journal *Nature*, found that should the global temperature increase to around 3C (5.4F) above the pre-industrial era then the ice shelves that hold back the giant continental ice sheets would be lost over the next few centuries.

This would trigger a collapse that would go on for thousands of years, raising sea levels by 0.6 meters to 3 meters (2-10ft) by the year 2300 depending on how high manmade greenhouse gas emissions remain. Our descendants living in the year 5000 will continue to suffer the consequences of today's fossil fuel burning, as sea levels continue to rise up to 9 meters (30ft) above current levels.

However, the results leave a narrow opening through which humanity can slip. If temperatures remain within 2C (3.6F), the collapse of the shelves will stabilize and the sheets will remain mostly intact. Sea-level rise from Antarctica would remain within 23cm (9 inches) by 2300.

To achieve this, the authors said the world will have to follow the Intergovernmental Panel on Climate Change's (IPCC) lowest emissions scenario. This requires global emissions to peak around 2020 and decline to below zero by 2100.

In preparation for the climate conference in Paris next month, 150 governments representing 90% of emissions have submitted pledges to cut and curb them. However, these still chart a pathway to a world well above 2C – one analysis suggested they lead to 2.7C (4.9F) of warming, not enough to avoid the runaway decline of the Antarctic ice.

The new study “ultimately confirm[s] the suspicions of earlier glaciologists that the fate of ice shelves largely determines whether Antarctica contributes less than 1 meter or up to 9 meters to long-term sea-level rise”, wrote the California Institute of Technology scientist Alexander Robel in an accompanying comment piece in Nature.

Hilmar Gudmundsson, a scientist at the British Antarctic Survey, said the changes between 2100 and 2300 were “large and alarming” although the degree of uncertainty was still high.

In 2014, Professor Eric Rignot, a senior researcher at NASA, made the dramatic finding that the west Antarctic ice sheet and its 4 meters (13ft) worth of sea-level rise had already started slipping away. He said the paper's assertion that the loss of this ice sheet could be stopped was “hardly believable” because the projections lacked reliable modelling of ocean circulation and iceberg calving. He said the loss of the West Antarctic sheet was “inevitable”; the only thing humans could control was how fast it goes.

“Whether we control our emissions or not will only matter in terms of how fast we get there. I find it disheartening that we are still talking about 2C above pre-industrial as a ‘reasonable’ target when we already passed the threshold for a large share of the ice sheets,” he said. “It is counterproductive to give the impression that we have to figure out a way out of carbon soon, when we really need to do this yesterday,” he said.

The global sea level has risen roughly 20cm (8 inches) over the past century and is already causing problems for communities in low-lying areas. Only a little of this has so far been caused by melting ice; most comes from the expansion of oceans as they warm. But Golledge and his colleagues warned that this would change in the future if Antarctica's ice sheets began falling into the sea.

Antarctica's two ice sheets, east and west, cover an area the size of the contiguous US and Mexico combined and would raise the seas 60 meters (196ft) if lost completely, according to the US National Snow and Ice Data Centre.

The friction of floating ice shelves against the deeply buried rock of the coast slows the flow of ice from the interior. Removing the ice shelves is like taking the chocks from a truck sitting on a slope. Without them, the loss of the giant ice sheets will trigger an “unstoppable” event that will last for thousands of years, said Golledge’s team. Some buttressing shelves have already been lost and others are weakening.

At the UN climate summit in Paris, much of the talk will be about the steps that can be taken over the next decade to strengthen each country’s emissions cuts. Professor Andrew Shepherd, the director of the Nerc Centre for Polar Observation and Modelling said the new research added urgency to Paris. “Ahead of COP [Conference of the Parties, the Paris summit], this new study is a useful reminder that future climate warming might trigger extreme and irreversible ice losses from Antarctica over centuries. But to reliably predict how things could change within the next century, we need to build and use a new class of ice sheet models that can capture the detailed response of each of the continent’s outlet glaciers,” he said.

65. Vast Alpine Glacier Could Almost Vanish By 2100 Due To Warming

One of Europe’s biggest glaciers, the Great Aletsch, coils 23 km (14 miles) through the Swiss Alps - and yet this mighty river of ice could almost vanish in the lifetimes of people born today because of climate change. The glacier, 900 meters (2,950 feet) thick at one point, has retreated about 3 km (1.9 miles) since 1870 and that pace is quickening, as with many other glaciers around the globe.

That is feeding more water into the oceans and raising world sea levels.

Andreas Vieli, a professor who heads the University of Zurich’s group of glaciology experts, said the Aletsch may lose 90 percent of its ice volume by 2100, with the lower reaches melting away. “My kids are going to see a very different scenery in the Alps,” he said.

The glacier is a vast water reserve, important for irrigation and hydroelectric power.

For glaciers around the globe, from the Andes to Alaska, rising temperatures mean that the volume lost from the summer melt exceeds snows that replenish the glaciers’ ice in winter. The Aletsch flows downhill at about 180 meters (590 feet) a year.

The World Glacier Monitoring Service says “the rates of early 21st-century mass loss are without precedent on a global scale” at least since measurements began around 1850.

66. World Took Step Towards Greener GDP in 2014; More Needed

Governments took a step towards greener economic growth in 2014 but will need to do far more to limit rising temperatures to a United Nations goal of two degrees Celsius (3.6 Fahrenheit), a study by accountancy firm PwC said recently. The carbon intensity of the world economy - the amount of greenhouse gases emitted per dollar of gross domestic product (GDP) - fell by 2.7 percent in 2014, the steepest decline since PwC started issuing reports seven years ago, it said.

“The 2014 numbers suggest a turning point” towards making growth less dependent on fossil fuels, said PwC, a network of firms in 157 countries in assurance, advisory and tax services.

World GDP rose by 3.2 percent in 2014, while carbon emissions rose by just 0.5 percent, it said.

Britain was best of the Group of 20 nations with a steep 10.9 percent fall in its carbon intensity last year, a shift PwC linked to strong economic growth, a warmer winter that reduced energy demand and lower use of coal.

France, Italy and Germany also had big falls in carbon intensity last year.

PwC said the rate of decarbonization needed to more than double, to 6.3 percent a year, to get on track to limit rising temperatures to a U.N. target of 2 degrees Celsius (3.6 Fahrenheit) above pre-industrial times. That would be a wrenching pace of change. Even in Germany in the 1990s, when inefficient Soviet-style factories were shut in the east after reunification, decarbonization rates were only about 3 percent a year, the report said.

"You need revolutions in the energy sector in every country, every decade," Jonathan Grant, PwC sustainability and climate change director, told reporters.

Since the year 2000, the report said that global carbon intensity had fallen by an average 1.3 percent a year. At that rate, PwC estimated that the amount of carbon that could be emitted before exceeding 2C would run out in 2036.

67. COP21: Trading, Transport Provisions Expanded

Crucial negotiations in Bonn on a new global climate deal for the period after 2020 have resulted in a longer rather than shorter draft negotiating text, following procedural wrangling and concerns over elements controversially missing from the previous draft. The new text has swollen to 34 pages, up from 20. Some issues were carefully integrated as refinements, but others reflected parties' original positions in the 83-page Geneva text before any compromises had been made.

Developing countries have insisted on an explicit reference to common but differentiated responsibilities and the historic responsibility of developed countries in meeting their share of emissions reductions. These principles, from which some developed countries wanted to move on, are now reflected in policy options in various parts of the document.

Businesses' insistence on market mechanisms appears to have yielded results. An option whereby "any party may elect to use certified units" generated under a new market-based mechanism has been included.

Another insertion adds that "modalities and procedures shall ensure that the design and operation of the mechanism delivers net global emission reductions, through the cancellation of a share of units generated, transferred, used or acquired from offsetting activities".

In addition to a form of carbon offset mechanism, which part of the text suggests could be similar to the Kyoto Protocol clean development mechanism, article 3 now includes reference to REDD+ and financing for avoided deforestation based on actions that are immediately implementable, scalable and results oriented.

A joint mitigation and adaptation mechanism has also been included "to support the integral and sustainable management of forests as an alternative to results-based payments".

Another major change, welcomed by environmental NGOs, is a reference to the inclusion of international transport emissions. Countries should "pursue limitation or reduction of greenhouse gas emissions from international aviation and marine bunker fuels" through the International Civil

Aviation Organization and the International Maritime Organization, respectively. This should be done “with a view to agreeing concrete measures addressing these emissions, including developing procedures for incorporating emissions from international aviation and marine bunker fuels into low-emission development strategies”, it says.

Far more options now appear on the divisive issue of climate finance, which is supposed to reach \$100bn a year by 2020. One option now insists that flows from developed countries exclude double counting, likely to refer to widespread repackaging of foreign aid.

At the conclusion of the talks, negotiators declined to give the co-chairs leeway to generate another slimmed down text. Instead, they called on the UNFCCC secretariat to carry out a technical assessment.

68. World's Worst Greenhouse Gas Spurs Global Smuggling Rings

Every year, diplomats gather to review progress in implementing the Montreal Protocol, a 1987 treaty that limited global use of chlorofluorocarbons and other ozone-eating chemicals. This year's meeting, set to open Nov. 1 in Dubai, will target hydrofluorocarbons, a class of ozone-friendly coolants developed to replace CFCs that have turned out to be incredibly potent greenhouse gases, thousands of times more effective at warming the planet than more common emissions such as carbon dioxide and methane.

The U.S. and Europe have taken measures to ban HFCs and are pushing other countries to do the same, as well as offering financial aid to help poorer countries switch to newer refrigerants.

Environmentalists say they fear another round of chemical bans could invigorate the worldwide black market in restricted coolants, which are generally cheaper than their replacements. Under the Montreal Protocol, developing countries have been allowed to keep producing some coolants barred in the U.S. and Europe for several years, creating a ready supply for traffickers.

“There's an enormous amount of money to be made,” said Shamila Nair-Bedouelle, head of OzonAction, a United Nations agency that oversees worldwide compliance with the chemical bans.

Illicit chemicals have been shipped inside containers of oranges and glass ornaments, hidden in canisters-within-canisters designed to fool port inspectors and squirreled away on fishing boats plying the South China Sea. In Canada, authorities say one company imported banned coolants inside used jet cockpits, turning them into the industrial equivalent of drug mules.

In June, customs officials in the United Arab Emirates seized more than 13,000 empty refrigerant cylinders at the Port of Ajman that authorities believe were destined to be filled with banned chemicals.

The leading manufacturers of replacement chemicals, Chemours Co. and Honeywell International Inc., have responded with education campaigns and surveillance programs. They also have conducted joint raids with local authorities. “People talk about it as having the same profit as drugs without the same risks,” said Julien Soulet, Honeywell's managing director for Europe, the Middle East and India.

About 3,700 tons of banned refrigerants flow through East Asia and the Pacific region alone each year, a haul worth about \$68 million in 2013, according to a UN report. Most of it comes from

China, the world's leading producer of refrigerants. Some chemicals are exported to countries where the coolants are still legal, but a portion finds its way to brokers who also serve the black market.

The middlemen ship to ports across Asia, often using front companies in the Philippines and Indonesia that divert materials to the U.S., Europe and Russia, the report said. In April the UN said a program designed to connect customs officials across borders stopped the transfer of 545 tons of ozone-depleting substances in 2014.

While smuggling is often a sideline venture for legal manufacturers and brokers, the trade also draws in "transnational criminal networks spanning different continents and nationalities," the UN found.

In 2011 refrigerated shipping containers exploded in Brazil, China and Vietnam, killing three port workers. Investigators determined coolant in the containers' systems had been blended with methyl chloride, a World War II-era chemical that sells for about 25 cents a pound, a fraction of what legal refrigerants cost.

U.S. prosecutors are stepping up enforcement against companies that buy illegal refrigerants, said Drusilla Hufford, director of the Environmental Protection Agency's stratospheric protection division. In 2014 an air conditioning company in Miami was fined \$275,000 and sentenced to five years' probation after pleading guilty to importing a restricted chemical. "They will not be the last ones," Hufford said.

In the heyday of refrigerant smuggling in the 1990s and 2000s, chemical traffickers could get "a better return on their investment than cocaine," without the risk of mandatory minimum sentences imposed on drug dealers, said Thomas Watts-Fitzgerald, an assistant U.S. attorney who has prosecuted cases in Miami, a hot spot for illegal chemical shipments.

Cheaper substitutes and a crackdown by law enforcement have dimmed the allure, he said, though smugglers can still turn a healthy profit. In 2010, U.S. prosecutors won a conviction against St. Louis-based Mar-Cone Appliance Parts Co. for illegally importing more than 100 tons of HCFCs, another ozone-depleting chemical. The company probably cleared a 40 percent profit, Watts-Fitzgerald estimated. "There's a phenomenal amount of this stuff still out there," he said. "We could backslide."

69. WHO Issues Policy Suggestions for Climate, Health

Higher vehicle emissions standards and a focus on public transit are among recommendations the World Health Organization put forward in a report aimed at helping policy-makers take steps to reduce emissions of short-lived climate pollutants (SLCP) that are health hazards and contribute to climate change.

Reducing vehicle emissions through tougher standards could reduce "black carbon" particle emissions and other pollutants, improving air quality and reducing disease resulting from outdoor air pollution, the WHO said in the October 22nd report, produced in collaboration with the Climate & Clean Air Coalition to Reduce Short-Lived Climate Pollutants, a partnership of government, business and other organizations.

"Shifting to cleaner transport modes and implementing improvements in vehicle technologies both present good opportunities to reduce SLCP emissions in ways that benefit health," the report said.

“Urban transit schemes, as well as other policies or investments that prioritize safe, active travel on dedicated networks are necessary, and complement strategies that reduce tailpipe emissions.”

The report, which ranked available and affordable ways to mitigate short-lived pollutants according to their potential to improve health, reduce emissions and prevent climate change, also recommended that governments:

- adopt policies and investments that prioritize rapid transit and safe walking and biking routes;
- provide cleaner and more efficient stove and fuel alternatives to the approximately 2.8 billion low-income households worldwide currently using primarily wood, dung and other solid fuels for heating and cooking;
- encourage high- and middle-income populations to increase their consumption of plant-based foods, which could reduce heart disease and some cancers in addition to slowing methane emissions from food animals.

“The health benefits that may be obtained from these strategies are far larger than previously understood, and they can be enjoyed immediately and locally,” said Maria Neira, director of the WHO Department of Public Health’s environmental and social determinants of health division.

The report is part of WHO’s effort to address the health impacts of air pollution. The organization said it is piloting some of the approaches as part of an urban health initiative it is leading with the climate coalition. The venture will include a cost-benefit analysis of the recommended measures, the organization said.

70. Study Finds Carbon Nanotubes in Lungs of Paris Kids

A French-U.S. study has found “combustion-derived” carbon nanotubes in lung samples of children in Paris, an apparent first that “strongly suggests” that city dwellers routinely inhale such particulate matter and that some earlier findings should be re-examined.

The article said researchers set out to characterize “carbonaceous” particulate matter found in the lungs of children ages 2 months to 17 years suffering from particularly bad asthma. They were chosen because such patients in France are routinely subject to bronchoscopy testing with broncho-aveolar lavage, which yields lung tissue samples.

Researchers looked at 69 randomly selected lung fluid samples, of which 64 were frozen as far back as 2007, while five were “fresh” and never frozen.

“Taken together, our results show that [the] particulate matter is mostly composed of anthropogenic multiwalled carbon nanotubes in all analyzed samples,” study authors said, describing the carbon nanotubes as ranging from 10 to 60 nanometers in diameter and several hundred nanometers long, and similar in structure to those found in diesel exhaust and dust.

The World Health Organization in 2013 classified air pollution and fine particulate matter as leading environmental causes of lung cancer and estimated that particulate matter was responsible for millions of premature deaths due to cardiovascular disease.

“However, the most responsible components of the particulate mix [in air pollution] are still unknown,” the authors said in an article in the journal *EbioMedicine*.

WHO has cited PM2.5 (particulate matter with a diameter of less than 2.5 microns) as a particular concern because it can be deposited deep in the lungs, while PM10 is slightly larger, of less than 10 microns.

A 2014 report from the Organization for Economic Cooperation and Development said 91 percent of PM2.5 found in a 2009 study in London was attributable to diesel vehicles.

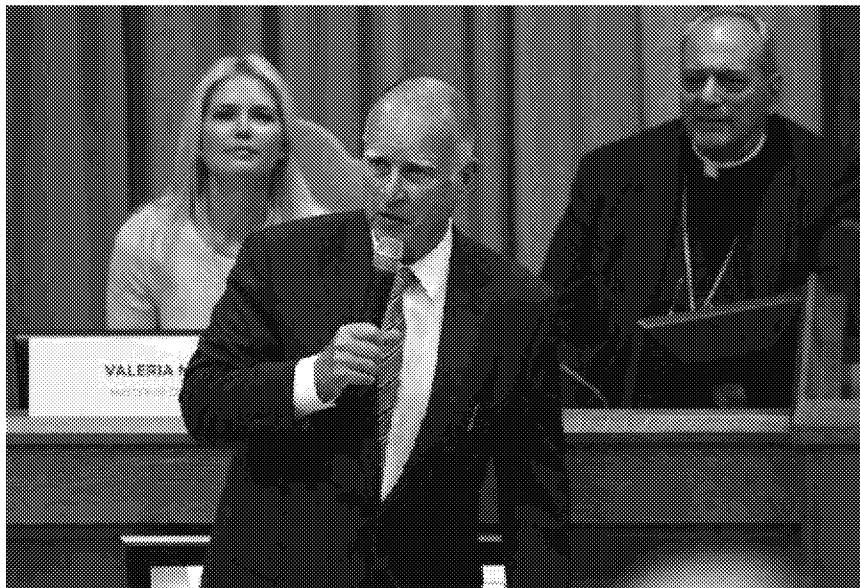
Previous studies have observed "black material" inside lung cells but were not able to identify it as carbon nanotubes (CNT), perhaps because researchers were using only optical microscopes the authors said. But using more powerful high-resolution transmission electron microscopy and energy dispersive X-ray spectroscopy, researchers in the French-American study observed carbon nanotubes inside lung cells of the five nonfrozen fluid samples, structures never exceeding 2 microns in size.

Because freezing causes cell lysis, obscuring any carbon nanotubes present, the researchers hypothesized that the 64 frozen samples also contained carbon nanotubes within lung cells. "Results of previous studies," that relied on optical microscopes "need to be reconsidered," the authors state.

"To the best of our knowledge, this is the first study showing that CNTs from anthropogenic sources reach human lung cells," the EbioMedicine article said.

Although the number of samples examined is limited, the findings are significant because the carbon nanotubes found are similar to those detected in dust and vehicle exhaust collected in Paris, the U.S. and India. As air pollutants could be transported via the atmosphere, "we expect that humans may routinely breathe such carbon nanoparticles," researchers said.

71. World Catholic Leaders Appeal for Bold Climate Change Agreement



California Governor Edmund "Jerry" Brown (front) speaks during the "Modern Slavery and Climate Change" meeting at the Vatican July 21, 2015.

Roman Catholic leaders from around the world made an unprecedented joint appeal to the forthcoming U.N. conference on climate change to produce "a truly transformational" agreement to stem global warming. The Catholic cardinals, patriarchs and bishops signed the appeal in the Vatican, saying

climate change had to address social justice and that any agreement must be fair and ensure the poor and most vulnerable were not sold short.

Their 10-point document was based on Pope Francis's landmark encyclical last June, called "Laudato Si", which demanded urgent action to save the planet from environmental ruin.

It again put the 1.2 billion-member Catholic Church in the front line of the debate over the causes of climate change, an active role that some Catholic conservatives, including U.S. Republican presidential candidate Jeb Bush, have criticized.

The document said "reliable scientific evidence" suggests global warming is the result of "unrestrained human activity", current models of progress and development, and excessive reliance on fossil fuels. Climate change skeptics argue that man's role in global warming has not been conclusively proved.

"The pope and Catholic Bishops from five continents, sensitive to the damage caused, appeal for a drastic reduction in the emission of carbon dioxide and other toxic gases," said the appeal to the conference, which meets in Paris from November 30 to December 11.

Noting that Francis had addressed his encyclical on the environment "to every person living on this planet", the appeal said: "Whether believers or not, we are agreed today that the earth is essentially a shared inheritance, whose fruits are meant to benefit everyone".

The document was signed by Church leaders from India, Europe, Colombia, Lebanon, Angola, the United States, Canada and Papua New Guinea.

The signatories represent all national or regional bishops' conferences, making it the first time in living memory that a Catholic appeal to world leaders was totally global, Cardinal Oswald Gracias of Mumbai, India told a news conference. "It is important that there be a variety of non-state activists in (the climate talks) and the Church can be a very important player," said Professor Jean-Pascal van Ypersele, a former vice-chair of the Intergovernmental Panel on Climate Change.

The appeal called for the Paris conference to keep in mind not only the technical aspects of climate change, but "particularly the ethical and moral dimensions".

The leaders asked delegates to the conference, known as COP21, to "strongly limit" global temperature increase and set a goal for complete decarbonization by mid-century and to "ensure inclusion and participation of the poorest, most vulnerable and impacted at all levels of the decision-making process".

72. Dalai Lama Says Climate Change Destroying Tibet's 'Roof of the World'

Tibet's exiled leaders, including the Dalai Lama, said two-thirds of the glaciers in their mountain homeland may disappear by 2050 because of climate change and demanded a stake in international climate talks later this year. The Tibetan plateau, which has the largest store of ice outside the North and South Pole, has experienced rising temperatures of 1.3 Celsius over the past five decades, three times the global average, the leadership said in a statement.

Tibet, with an average altitude of over 4,000 meters (13,125 ft.) is particularly vulnerable to the impact of climate change. Warming is already melting glaciers that are the source of water in rivers that help support about 1.3 billion people.

"The Tibetan Plateau needs to be protected, not just for Tibetans but for the environmental health and sustainability of the entire world," the Dalai Lama, Tibet's exiled Buddhist leader, said.

"As vital as the Arctic and Antarctic, it is the Third Pole," he said in the statement issued from the Indian hill station of Dharamsala, where the Tibetan government-in-exile has been based since the Dalai Lama fled his homeland in 1959.

Tibet's leaders said they want an effective climate change agreement and also want to have a say in the talks.

About 80 percent of the ice in Tibet has retreated in the past 50 years, according to the government-in-exile.

With the rapidly melting permafrost, 12,300 million tons of carbon could be released into the air, further exacerbating the problems of global warming, they said.